

# Railway Age

Vol. 85 November 10, 1928 No. 19



"Sunset Limited" crossing the Mississippi on Southern Pacific Car Ferry.

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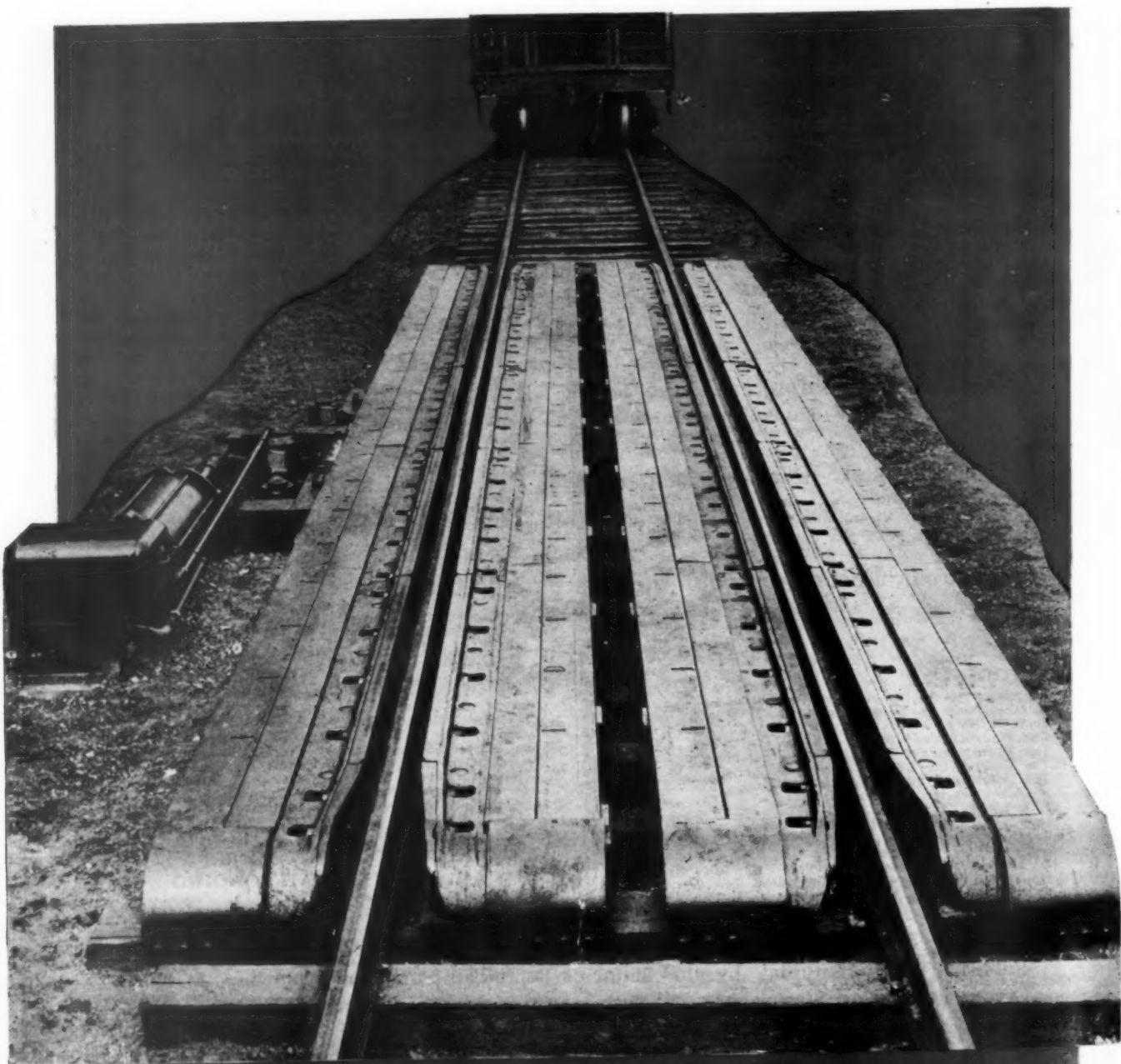
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# *The New "UNION"*



**POWER - STRENGTH**  
*—Flexibility—*

# Railway Age

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## Accomplishing the "Impossible"

ONE thing that railway operating officers have learned in the past few years is that so-called "impossibilities" are not always what the name implies. For example, the Western region of the Pennsylvania includes divisions whose physical characteristics are such as to preclude producing more than 12,000 gross ton-miles per train-hour. When an average of 25,000 was reached for the entire region some time ago, it seemed impossible to increase that figure, but in October the average for the region was well over 32,000 gross ton-miles per train hour. Likewise, when a reduction of a million dollars on car hire was announced as a goal for this year, on the Illinois Central, there were many who believed its accomplishment impossible, yet the saving this year will amount to approximately one and a half million dollars. Cases of this sort might be multiplied almost indefinitely on dozens of railways. The significant fact behind all this is that operating officers seem unafraid to tackle almost any problem. This is the sort of thing that keeps the operating ratio down.

## More Railways in Hook-up With Air Transport Lines

FOLLOWING the example of the Pennsylvania, the Northern Pacific, the Great Northern, the Chicago, Milwaukee, St. Paul & Pacific and the Atchison, Topeka & Santa Fe, in making arrangements for joint airplane and rail service for passengers, with complete co-ordination of schedules and provision for the sale of through tickets, several additional roads have recently announced similar action. One of these, the Baltimore & Ohio, is now working in conjunction with the Northwest Airways, which operates planes between Chicago and the Twin Cities, Minn., connecting at both points with through trains to and from the east and the west. In the southeast, the Atlantic Coast Line and Florida East Coast have arranged with the Pan-American Airways System for joint rail and air service between New York and Havana, Cuba, whereby a passenger leaving New York in the evening will be ticketed through to Havana, where he will arrive the morning of the second day. The part of the journey which is made by airplane is between Miami, Fla., and Havana. There seems to be no question of the existence of a demand for greater speed in passenger transportation. This is indicated not only by the success of the present joint air and rail service, involving the air line between Chicago and the Twin Cities, but also by the heavy patronage of the passenger carrying air lines which have no connection with the railways. There are a great many opportunities in the United States for

establishing a joint rail and air service which would enable passengers to effect a marked saving in time between various points. Advantage of many of these opportunities will doubtless be taken, since the air lines have shown a marked desire to co-operate with the railways, and the railways in their turn have displayed and are displaying a keen interest in the development of airplane service.

## Costs in Rate Cases

THE actual cost of transporting individual commodities not being ascertainable, how do the railways obtain the cost figures which they present in rate cases? The answer is by making special studies to obtain the facts as far as possible for such commodities over such routes and for such periods as necessary to permit a fair decision in a given case. The expense of compiling regularly such information for all commodities and for all routes would be prohibitive. Furthermore, such extensive information covering commodities, rates and routes not at issue could serve no worthwhile purpose. This is particularly true, since at best cost figures for railway service can be only more or less accurate approximations. Certain persons may be able to imagine going to a pigeon-hole and picking up records which would instantly disclose the cost of transporting stove pipe from Here to There, but those who are actually engaged in compiling and assembling accounting and statistical information about the railroads know that, as a practical matter, such a situation cannot obtain. The Interstate Commerce Commission itself has said: "The cost of service, while recognized as an important element in classification and rates, is not alone controlling. On that basis some articles, on account of relation of commercial value to cost of service, though furnishing a large volume of traffic, would not be carried at all, and others of high commercial value would have a very low rate without increasing tonnage." The advocates of the cost of service theory for railroad rates usually concede that rates cannot be based alone on cost, but that various other factors must be taken into consideration, such as the value of the commodity, economic conditions, etc. Conceding the necessity for considering these various other factors is tantamount to reducing the importance of cost of service data in rate cases. Why should anyone wish to force on the railroads the terrific expense of obtaining cost figures which perforce can have but slight significance? If railroad rates are not based primarily on costs, and could not be so based without bringing what is the justification for the expensive pursuit of a tenuous change in the economic structure of the country, what is the justification for the expensive pursuit of a chimerical cost accounting?



### *The Signalmen and the A. F. of L.*

**E**FFECTIVE October 23, the Brotherhood of Railroad Signalmen of America was suspended from the American Federation of Labor. This action followed the adoption of a resolution by the A. F. of L. in Los Angeles, Cal., in October, 1927, which required the signalmen's organization to transfer to the International Brotherhood of Electrical Workers or disassociate from its membership all members of the B. R. S. of A. who devote 50 per cent or more of their time to electrical work. The charter granted by the A. F. of L. in 1914 set forth the jurisdiction of the signalmen's organization as including, "All signalmen who are actively engaged in the construction and maintenance of mechanical and automatic block signals, locking and interlocking plants, mechanical, pneumatic, electric or otherwise, while employed in a signal department of a railroad company." In spite of this fact, the electrical workers have, for several years, been endeavoring to secure jurisdiction over the signalmen, and on August 6 of this year the signal organization was notified that 60 days would be given in which to comply with the resolution of the A. F. of L. At the convention of the signalmen's brotherhood in September the organization refused to surrender any members who perform railroad signal work to the electrical workers' organization. The suspension of the signalmen from the A. F. of L. is the result. No new precedent has been established by the fact that the signalmen will no longer be connected with the federation. The train service brotherhoods have never been affiliated with the American Federation of Labor and the clerks' organization is no longer allied with it. If the Brotherhood of Signalmen loses its charter in the A. F. of L., this will make its situation similar to that of these other organizations.

### *The Pennsylvania's Electrification Program*

**T**HE decision of the Pennsylvania to electrify its lines from New York to Wilmington, Del., as announced in the *Railway Age* of November 3, is effectually a declaration of faith in the future development of traffic, of the effectiveness and flexibility of the alternating current traction system and the ability of the railroad by improved facilities to compete with all other forms of transportation. The fundamental reason for the decision is a simple one—by the addition of increased power and additional rolling stock the capacity of the lines is to be increased to meet all demands of traffic. It is felt that the plan can if started now, be carried out at lesser cost than if postponed to some later date. From the nature of the program it is apparent that it represents a transfer of expenditures rather than a large increase. Normal improvement expenditures of the Pennsylvania have been averaging \$70,000,000 a year and the \$15,000,000 a year to be spent for electrification will make certain other capital expenditures unnecessary. News of the plans has had a stimulating effect on utility company and electrical manufacturing company securities and others may also be affected. It is pointed out by the Copper and Brass Research Association that about 55,000,000 pounds of copper will be required, 30,000,000 pounds for catenary, 14,000,000 for 365 new locomotives, 5,000,000 for multiple-unit cars and 6,000,000 for transformers and substations. A study will disclose many other modifications in the usual routine of railroad purchases. The fact of outstanding importance is that the decision indicates to what extent the management is willing and able to anticipate future requirements.

### *The Case of the Copper Nails*

**T**HE stock books which railway supply officers employ to keep track of the materials in their store-rooms and yards are remarkable books. They describe each of the thousands of items of supplies which it is necessary to provide on instant notice for all the varied needs, show the items available, the number ordered and used, and the surplus, and offer other information for the storekeeper. In fact, they mean so much to the storekeepers in controlling their stocks from day to day that they are frequently spoken of as their "Bible." That these books, however, have by no means displaced the need of good judgment and common sense in supply work is aptly illustrated by recent experiences of railway officers. A mechanical officer, observing the frequency with which his forces were obliged to accept substitutes for certain bolts, and then cut the substitute bolts to the required size, decided to investigate. The storekeeper pointed to his stock books and the books checked with the stock, but they failed to distinguish between withdrawals for needs and withdrawals for substitution, and the result was a recurrent shortage of one size bolt and a continued over-supply of other sizes which could be used only after the expense and delay of cutting and re-threading to a smaller size. In another instance, an engineering officer, observing in the storekeeper's stock a large quantity of copper nails which had been obtained for special work and left unused, thought to accommodate the store department by using these nails in certain work. The order was placed and the nails shipped but shortly thereafter, the store department, relying apparently only on the stock book record of supplies on hand and used, noted the depletion of this stock and replaced it. The two instances are too common in supply work not to warrant attention. They both illustrate the weakness of any plan that places too much reliance upon mere figures and records for conducting operations. Many defects and weaknesses in practice can be remedied by improvement in system and records, but no system of storekeeping, or any other kind of railway procedure, has yet been invented that will dispense with the need for judgment.

### *The Question of Supply Service*

**T**HE Purchases and Stores Division of the American Railway Association has formed its committees and begun preparations for another year's work, which will culminate in the convention next summer at a place yet to be determined. The committee meetings to be held are occasions when those engaged in the procurement, care and distribution of the vast quantities of material required to operate and maintain the railway plants of the country will gather to consider a variety of topics and problems of common concern or interest, as indicated by the committee assignments. Recommendations are to be made on the economical handling of commodities, on the care of material, on its control and conservation, and upon office methods and practices. New policies are being propounded and larger authority sought, and study given to ventures that were not included among those considered in earlier periods. It will, no doubt, be remembered throughout the year's work, however, that the question of supply service continues to be important. Obviously, while a railroad expends tremendous sums for materials, it is not operated and maintained for the purpose of buying that material, but instead the material is bought to meet



the railroads requirements, and while the purchasing and stores officer who guards material well is valuable, the supply officer that can deliver is indispensable. We are ending a century of rail transportation and entering an era when existing and added agencies of transportation will be subjected to increasing tests of service. Maintenance and construction officers will face problems and mechanical officers will face complexities which will tax their training, skill and experience to the utmost. So also will the purchases and stores officers face increased problems, but the great opportunity is that of service, and the purchases and stores committees will do well, it would seem, to keep before their members this theme of service, and apply themselves diligently and consistently to ways and means of improving it at all times.

## A Stitch in Time

**S**TANDARDS of roadway construction, covering such details as the width of roadbed, slopes of cuts and fills, dimensions of ditches, shrinkage allowance, etc., are presumed to represent the results of accumulated experience. Adherence to them is expected to insure a substantial roadbed, except for such limitations as are imposed by the inevitable subsidence and settlement which must be experienced for some years subsequent to construction.

It is obvious that on lines through muskeg swamps or through hills, where slippery clay taken from cuts provides the only material for embankments, the possibility of obtaining satisfactory track conditions until after a long period of solidification is exceedingly remote. But even where the circumstances are by no means so severe, it is possible to cite cases where there has been too much of a tendency to rely on strict adherence to specifications in roadway construction, rather than to face the issue squarely and recognize the need for departure from conventional practice. Shovel excavation during construction is cheaper per cubic yard of material handled than excavation by ditchers after the line is in operation. The adoption of flatter cut slopes—will in some cases reduce the amount of ditching necessary.

Economy in construction is generally favored by balancing the quantities in cuts and fills but it has sometimes paid to waste especially unstable material from cuts rather than to take any chances with its use in adjacent embankments. It has also frequently proved wise to use borrowed material rather than cut excavation for embankments subject to saturation from high water in rivers, because of the treacherous nature of the material taken from the cuts, when wet.

It is much easier to raise track on sand than on clay, a fact which led in one case to the center dumping of sand and the side dumping of clay in raising an embankment under traffic with material taken from a cut that contained alternate strata of both sand and clay. The prospect of water pockets was apparently disregarded.

Construction work is usually carried on with a definite date of completion in mind, such that it is necessary to set up a schedule of grading output that taxes both the contractor's organization and the engineering force. There is, therefore, limited time in which to consider anything other than adherence to standard practices in roadway construction. It is clear, however, that problems of maintenance should be kept in mind at all times during the course of the work.

## Need of Heavier Car Loading

**T**HE CAR Service division of the American Railway Association is distributing among shippers and receivers of freight a bulletin entitled "An Open Door to Economy", the purpose of which is to promote heavier loading of cars. In commenting upon the campaign being conducted for heavier loading attention may well be called to the fact that one of the objectives adopted by the railway executives in the spring of 1923 in their program for more efficient operation has never been attained, or even approached. The objective referred to was mentioned as follows: "That all interested be impressed with the necessity for loading all cars to maximum capacity in an effort to bring the average loading to 30 tons for the entire country." Not only has an average loading of 30 tons never been attained, but in every year since 1923 the average load per car has been less than in 1923, and thus far in 1928 has been less than in any year since the war excepting 1922.

In the first eight months of 1923 it was 28.2 tons, while in the first eight months of 1928 it was only 26.5 tons, a decline of six per cent. This may seem a small decline, but it has had a very marked effect upon the operating statistics of the railways. The number of tons of freight carried one mile by them in the first eight months of 1928 was almost exactly the same as in the corresponding part of 1923, but there was an increase of 7 per cent in the number of miles loaded cars were moved to handle the business, and an increase of 10.6 per cent in the mileage made by all cars, loaded and empty. The railways increased the average number of miles each car was moved daily from 27.4 to 30.3, or almost 11 per cent, but owing partly to the increase in empty car mileage, and partly to the decline in the average load per loaded car, the average amount of service rendered with each car in carrying freight actually declined from 511 to 505 net ton-miles.

It is quite obvious that large economies in operation could not have been effected if increased "car efficiency" had been the only means relied upon, because the effect of the increase in the average mileage traveled by each car daily was more than offset by the effects of the increase in empty car mileage and the decline in average load per loaded car. The average number of cars per train was increased from 39.4 to 47.8, or more than 21 per cent, and, in consequence, in spite of the decline in the average load per car and the increase in the number of empty cars in the average train, the average number of tons or freight per train increased about nine per cent.

The average speed of trains was increased from 10.8 to 12.9 miles per hour, or 19.4 per cent, and this, together with the increase in average tons per train, resulted in an increase of 36 per cent in the number of tons of freight carried one mile hourly by the average train. In spite of the increase in car miles required to handle the traffic, the increase in the number of cars per train was so large that there was an actual decline of almost 8 per cent in total freight train miles, and a decline of 15 per cent in the total amount of coal consumed in road service. In other words, improvements in the physical properties and in operating methods, resulting in a large increase in the amount of service rendered by the average train hourly in actually carrying freight, much more than offset all adverse influences, and resulted in both great improvements in the service rendered to the shipper and in large economies in operation.

It is quite obvious, however, that the economies effected in operation would have been much larger if the average load per car had increased instead of declined. It is almost needless to say that an increase in the average load per car occurred in almost every year prior to 1920. Car loading statistics make quite plain why there has been a decline in the average loading per car within recent years. It has been due to a tendency of shipments of heavy-loading commodities actually to decline, or, at least, to increase less in proportion than shipments of light-loading commodities. Grain, coal, forest products, ore and coke may all be classified as heavy-loading commodities. The number of cars loaded with these commodities in the first 42 weeks of 1923 was 15,326,596, while in the corresponding weeks of 1928 it was only 13,693,081. The remaining classes of commodities may be classified as light-loading. The number of cars loaded with them in the first 42 weeks of 1923 was 25,215,452, while in the corresponding part of 1928 it was 28,062,868. In other words, there was an absolute decline in loadings of heavy-loading commodities, and an absolute increase in loadings of light-loading commodities. Other things being equal, the result was bound to be a decline in the average load per car.

But other things did not have to be equal. The railways have been constantly furnishing the shippers cars of larger capacity. In the long run it is to the shippers' interest that the average load of any given commodity carried per car shall increase. There is nothing that reduces the cost of transportation in so many ways as an increase in the average loading of cars. Have shippers been loading cars heavier? The answer is given in the Car Service Division's bulletin, "An Open Door to Economy." Thirty-five of the 69 commodities reported were loaded as heavy or heavier in 1927 as in any year since 1922. This means that the average loading of the remaining 34 commodities was less in 1927 than in some previous year. There were 17 commodities of which the average loading was less than in 1923. The commodities which were loaded lighter in 1927 than in some earlier year included corn, oats, flour and meal, tobacco, fresh fruits other than citrus fruits, potatoes and other fresh vegetables, cattle and calves, fresh meats, other packing house products, poultry, eggs, butter and cheese, wool, hides and leather, coke, crude petroleum, salt, lumber, bar and sheet iron, structural iron and iron pipe, castings, machinery and boilers, cement, lime and plaster, sewer pipe and drain tile, automobiles and auto trucks, furniture (new), paper, printed matter and books, and textiles. The record shows that many classes of shippers have co-operated effectively with the railways in increasing the loading of cars; but it also shows that many have not done so, and that the decline in average loading per car has been partly due to this cause. The effect upon the average car load of the relatively greater increase in shipments of light-loading than of heavy-loading commodities has not been offset to as great an extent as it might have been by increases in the average loading of the various classes of commodities.

This is a matter which the railways are wisely bringing to the attention of shippers. Are not all shippers interested in the economy of railway operation? If not, why do they manifest so much interest in freight rates? Obviously, in the long run, the freight rates they must pay will be mainly determined by the economy with which the railways can operate. Now, every shipper who loads in a car less tons of any commodity than he could reasonably load thereby helps to create

conditions which will tend to justify higher freight rates than would otherwise be necessary. Largely owing to co-operation between the shippers and the railways the distribution of freight cars throughout the country has been improved until it is almost perfect, the shippers and railway officers who confer in future meetings of the Regional Shippers' Advisory Board might well deal with the problem of increasing the loading of cars in much the same spirit as they have already dealt with the distribution of cars. The result undoubtedly would be, in a comparatively short time, an increase in the number of tons of many kinds of commodities loaded per car, with resulting substantial increases of both the efficiency and economy of railway operation.

## Intelligent Retirement of Obsolete Cars

ONE of the principal reasons why a considerable number of roads have been able to cut labor costs and probably also material consumption in car repairs within the past year or more, has been the carrying out of carefully developed and more or less extensive programs for the retirement of obsolete car equipment. As relates to freight cars, for example, a substantial proportion of the repair operations on these roads has been necessitated by the frequent return of worn-out cars to the repair shops and repair tracks, sometimes after almost every loading. One railroad which has dismantled an average of about 3000 freight cars annually for the last three years and at the same time has substantially improved the condition of the cars retained in service, has decreased its bad order freight cars from 5.3 per cent in 1925 to 2.3 per cent in 1928, and at the same time has reduced the unit cost of freight car repairs in the same period from 1.4 cents to 1.1 cents per mile.

In a paper recently prepared by a car department officer, the following comments were made: "It is a poor policy to expend, say \$400 in repairs to an old car which inside of a few months will again be on the repair track requiring another large expenditure to continue it in service. When old equipment is reconditioned, the reinforcements and betterments should be of such a character that a reasonable expectancy of future life can be assured, even though the cost of so doing is rather high; otherwise it is advisable to retire the car. When a car reaches the age that retirement will cause a charge to operating expense less than the cost of reconditioning, it is problematical whether it is not advisable to retire the car. No set rule as to this can be applied, but individual cases and conditions must be considered from every angle, such as the value of the parts which can be reclaimed from the retired car to repair remaining existing equipment, the capacity and value of the car from a loading standpoint, and the probable cost of future maintenance. This is a matter of vast importance. To handle it in a haphazard manner without the subject being thoroughly analyzed by those who are able to view it from every phase, will result disastrously, and seriously affect operating expense—maintenance of equipment costs."

Both car repair costs and a large percentage of the delays in transit are due to the continued use of car equipment in various stages of obsolescence. One of the best opportunities for improving both of these factors is by the thorough study and development of adequate retirement programs.



# D. L. & W. Completes Three-Track Lift-Span Bridge

*New river crossing in Jersey City, N. J., has modern features of design and operation. Concrete approaches are a feature*

ONE of the largest railway bridge projects of the year is the new three-track lift-span bridge of the Delaware, Lackawanna & Western over the Hackensack river on its Morristown line, between Jersey City and Kearny, N. J., which was put in full operation early this month. This bridge, which has been under construction since March, 1927, has a total length, including viaduct approach structures, of about 1,500 ft. In addition, the bridge has earth embankment approaches at each end with a combined length of about 6,100 ft., which contain about 500,000 cu. yd. of fill.

The new bridge, which includes a vertical lift span providing a clear channel 150-ft. wide and a minimum vertical under-clearance of 40 ft., replaces an old swing bridge, which provided two clear channels at 65 ft. each, but an under-clearance of only 12 ft. at high tide. With such limited under-clearance, only a small percentage of the river traffic could pass the bridge without its being opened. This resulted in serious interference with the movement of trains, particularly with the commuter service to and from New York City during the morning and evening rush hours. Another important disadvantage in the old bridge was that, owing to the careless or reckless handling of boats in the river, the Lackawanna was in constant danger of having its old bridge damaged or destroyed, with the possibility of putting the entire line out of service. While these serious disadvantages pointed to a new bridge in the near future, the construction of the new bridge at this time was the result of an order by the War Department.

As the result of a careful study of the volume and character of the river traffic, it was evident that about 75 per cent of the vessels passing the bridge were 40 ft. or less in height. This led to the decision to design the new bridge with an under-clearance of 40 ft. above high tide. As it was necessary to keep the river channel open for the passage of river traffic, and to prevent interference with the operation of the old bridge, the new bridge was constructed directly opposite the old bridge, on a new alignment, 65 ft. south of the old line; the total length of the line changed is about 7,200 ft.

## General Description of Bridge

The new bridge includes the lift span, 198 ft. center to center of bearings, two tower spans, each about 85 ft. center to center of bearings, and three other fixed river



*The Lackawanna's New Hackensack River Bridge*

spans of steel deck girders. All of the river spans, with the exception of the lift span, are provided with a reinforced concrete slab deck, which carries a standard rock ballast section.

The viaduct approaches leading to the spans on each side of the river are entirely of concrete with a girderless flat slab floor structure supported on cylindrical columns. The only exception to this is at a point where Duffield avenue and Meadow street intersect under the east approach. Here, on account of the wide opening necessary, deck plate girders were used instead of flat-slab construction. Beyond the masonry approach structures at each end, earth embankments provide runoff to connections with the old line.

All of the river piers of the bridge are of concrete construction, with a belt course of granite masonry within the tidal range to protect the concrete against the deteriorating action of the tide water in the river, and damage from ice or floating debris. The lift-span and tower piers, which have bearing on solid rock at a depth of about 91 ft. below mean tide level, were founded on pneumatic caissons, while all of the other river piers were constructed within open cofferdams and seated on timber piling driven to refusal. No particular difficulties were encountered in this work, although extreme care had to be exercised in the sinking of the lift-span and

tower pier caissons to avoid disturbing the foundations of the old bridge.

### Lift Span Has Many Interesting Features

The lift span of the new bridge, which was designed for Cooper's E-65 loading, consists essentially of two riveted Parker trusses with vertical hanger members at each end. These trusses have a maximum depth of 48 ft. at the center and a span of 198 ft. center to center of bearings. In order to minimize their weight, all of the chord and main web members of the trusses were fabricated from silicon steel and proportioned for a basic unit stress of 22,500 lb. per sq. in. The trusses are spaced 45 ft. center to center, which provides for three tracks on 13-ft. centers, and a side clearance of 8 ft. between the center-lines of the outside tracks and the inside faces of the truss members.

The deck of the lift span, which is of the ordinary floor-beam and stringer type, with three lines of 10-in. by 10-in. bridge ties, has a maximum depth of eight feet from the base of rail to under-clearance. This type of deck was adopted in order to minimize the weight of the lift span, and for this same reason, all of the floor beams were made of silicon steel.

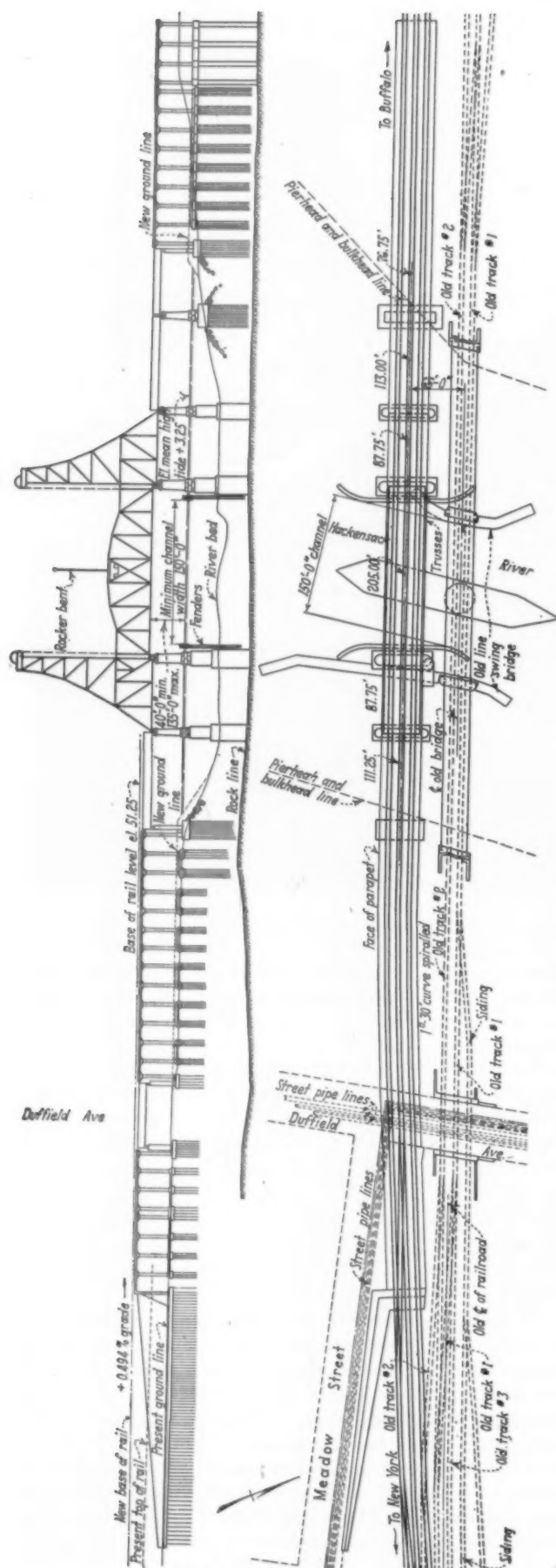
In its normal seated position, the lift span has a minimum under-clearance of 40 ft. above high tide and 46½ ft. above low tide. This permits the unrestricted passage of the larger part of the river traffic, but in order to take care of the larger vessels, a vertical lift of 95 ft. has been provided, which affords a maximum clearance of 135 ft. above high water.

### Tower Spans Are 168 Ft. High

The lift span is operated between tower spans having a length of 84 ft. 10 in. center to center of bearings, and a height of tower of 168 ft. above the tops of the river piers. These tower spans are constructed entirely of carbon steel with the exception that the floor beams are of silicon steel. The deck of these spans, above the steel floor system, is a 12-in. slab of concrete. The front legs of the towers, which rise in a vertical plane and carry the greater part of the dead load of the lift span, have direct bearing on the channel piers through cast steel pedestals, while the rear legs, which are relatively light members, have a graceful curve extending from the tops of the towers to the bearing shoes on the river piers next to the channel piers.

The moveable span is balanced by means of two concrete counterweights which have direct connection with the span through a series of cables passing over sheaves at the tops of the towers. These counterweights, which operate within the steel-work of the towers, are monolithic concrete structures, rectilinear in shape, poured within steel box forms made up of steel plates with suitable diaphragms and cross bracing. In constructing the counterweights, each was designed to counterbalance one-half of the total dead weight of the lift span, or normally about 1,250,000 lb. The final balance of the weights was accomplished by the addition of precast concrete blocks, each containing about one cubic foot of concrete, which were placed within the two covered wells provided in each counterweight.

The counterweights are connected to the span by means of eight groups of eight two-inch cables, two groups being located at each corner of the span and passing over separate sheaves at the tops of the towers. In other words, eight sheaves, two on each side of each tower, equally share the total weight of the span and the counterweights. These sheaves have a pitch diameter of



The Plan and Elevation of the New Bridge



13 ft. and, together with their shafts and bearings, have a total weight of about 230,000 lb. Each of the sheaves carries a load of about 300 tons. In providing two sheaves on each side of the towers, the sheaves were equipped with separate bearings, one set of bearings being located to the rear and outside of the other set of bearings for structural convenience. This necessitated an offset in the position of the groups of cable hitches at the counterweights, and also at the lift span, so that the cables in each group fall in a practically vertical plane. The cable connections at the span are made to the webs of a double-webbed transverse lifting girder, the spacing between the webs being equal to the longitudinal offset of the sheave bearings. All of the cable hitches to the span are effected through sockets and adjustable eye-bolts.

While there will be little occasion for slacking the counterweight cables in order to make sheave or cable adjustments or repairs, provision has been made for this emergency through special hanging and jacking frames, provided at the top of each of the towers. Through this arrangement the counterweights can be raised and hung above their highest normal position, slacking the cables for such purpose as may be necessary.

#### Special Arrangement Compensates

##### Shifting Cable Weight

The weight of the main cables rolling over the sheaves from the span side to the counterweight side and vice versa, is compensated by a special type of equalizing arrangement. This consists of a 56-ft., A-frame rocker bent mounted, by means of trunnions and bearings, on top of the lift span at the center, which is held in an up-



A Special Cantilever Pier Avoided Encroachment on Meadow Street

right position by four one-inch cables which loop around an anchor drum at the top of the bent and extend to a point near the top of each tower. At the east end, the cables have fixed connections, but at the west end they pass over a sheave and have connection with an auxiliary counterweight which operates in a vertical plane against guides. Through this arrangement, all of the various degrees of unbalance between the counterweights and the

span are compensated for. When the greater part of the counterweight cables is on the lift span side of the tower sheaves, i. e., when the span has been raised less than half of its full opening, the upward vertical component of the force exerted by the equalizing arrangement tends to lift the span. On the other hand, when the span has been raised above the mid-point of its upward travel and the greater portion of the counterweight cables is on the



The Old Line and Bridge, and the New Lift-Span Operator's House

counterweight side of the tower sheaves, the action is reversed and the downward vertical component of the force exerted by the equalizing arrangement tends to add to the weight of the span.

#### Span Operation Has Four Sources of Power

Power for the operation of the lift span is supplied from four independent sources, which make a complete power failure of the bridge almost an impossibility. Three power units are installed on the bridge. These consist of a motor-generator set and a gasoline engine-generator set, both of which drive two span-operating motors, and a gasoline engine, mechanical-drive auxiliary unit, which is entirely independent of the electrical equipment. Both generator sets are located in the bridge operator's house in the east tower, while the span motors and the gasoline engine auxiliary unit are located in a machinery house on the lift span.

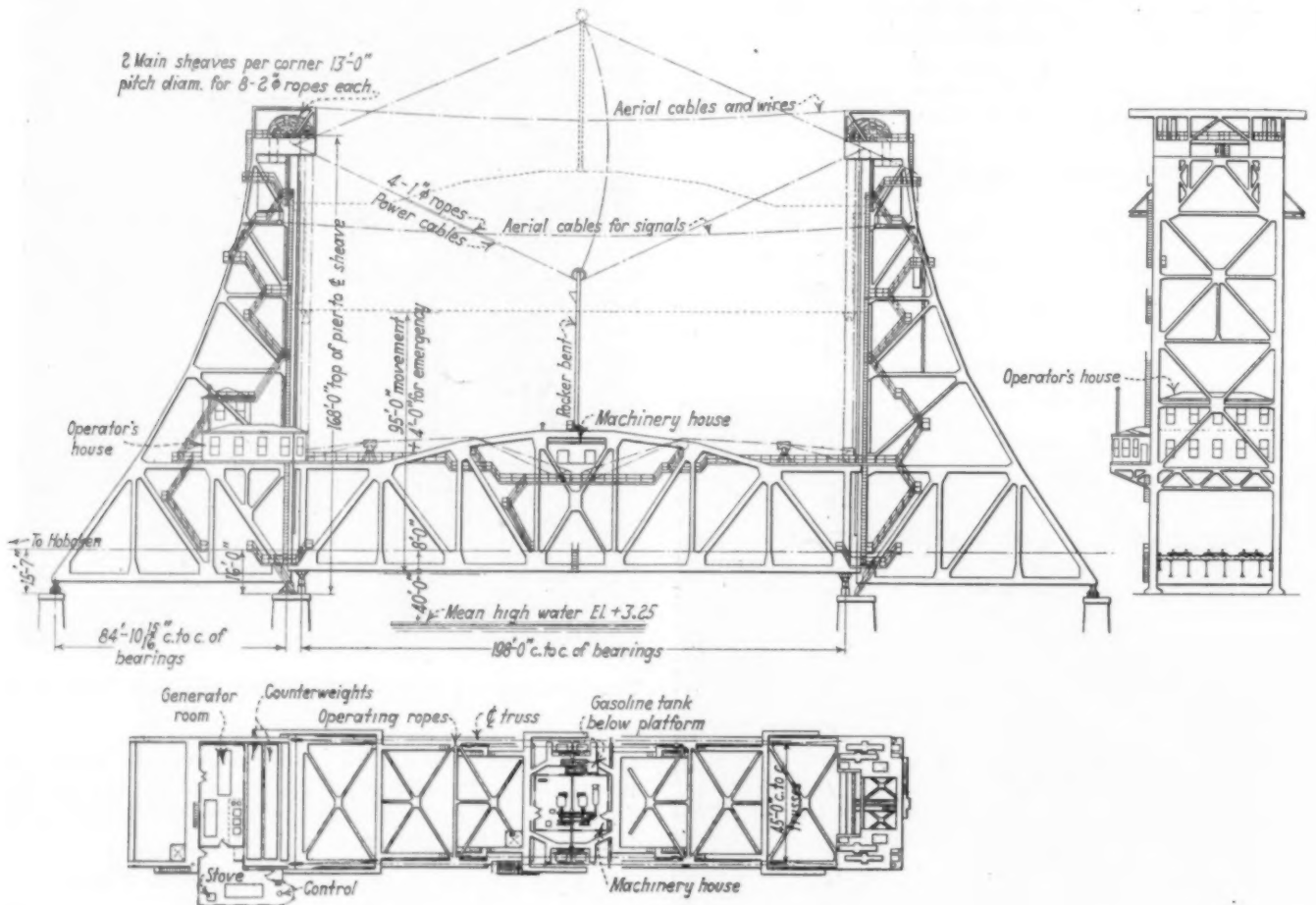
The motor-generator set consists of a 300-hp., 3-phase, 60-cycle, 440-volt, squirrel cage a. c. motor with a full load speed of 1,160 r.p.m., which is direct-connected to a self and separately-excited, 200-kw., 500-volt differentially compound-wound generator. Electric current for the operation of the motor-generator set and for bridge

lighting is supplied over two independent power lines, both delivering 3-phase, 60-cycle current at 6,900 volts. These power service lines are brought in from opposite ends of the bridge and both extend directly into the operator's house in the east tower.

In the present power arrangement, the line from the east end is utilized as the main power feeder, but both this line and the west line have connection within the operator's house with a battery of 100-k.v.a. transformers for reducing the voltage delivered to the motor-generator set. Both lines also have connection with two 5-k.v.a. transformers for furnishing 220 and 110 volts for the bridge lighting circuits. Power cables to the motors and lighting circuits on the lift span are carried on the rocker bent cables, then down the rocker bent and into the machinery house. Through this arrangement, the conductors are kept taut in all positions of the span.

motors ordinarily work together in series, but they are so arranged that in case of emergency, either motor may be cut out of service and the span operated by the other motor alone. Both of the driving motors are direct-connected through a train of gears to a single drive shaft which extends across the lift span. At each end, the drive shaft is gear-connected to two winding drums which actuate the up-haul and down-haul ropes in raising and lowering the span. Each of these drums carries two one-inch up-haul and two one-inch down-haul cables leading to the towers, one set of ropes winding in the grooves of the drums while the other set is unwinding. Steel plate wind guards on each side of the hauling ropes, as they extend vertically up the front legs of the towers, have been provided to prevent the humming and clapping of the ropes together.

The third means provided for operating the lift span in



The General Plan and Elevation of the Lift Span

The gasoline engine-generator set, which is provided for use in case of a complete power line failure, is capable of delivering only one-half the out-put of the motor-generator set, and, therefore, operates the bridge at about one-half the speed attained with the motor-generator set. This unit consists of a Sterling water-cooled, tractor-type, eight-cylinder gasoline engine, capable of developing 240 b. hp. at 1,200 r.p.m., which is direct-connected to a 100-kw., 300-volt, differentially compound-wound, direct-current generator. While of only half the capacity of the main generator, this unit, like the motor-generator, is capable of operating the lift span by either one or both of the driving motors.

The main driving units of the lift span are two 150-hp., d.c. motors, operated on 230 volts at 475 r.p.m. These

case of an electrical failure, is the gasoline engine unit which is located in the machinery house on the lift span. This is a Sterling tractor-type, water-cooled, six-cylinder engine, capable of delivering 180 b. hp. at 1,200 r.p.m., which is clutch-connected to an arrangement of hoisting machinery, which, in turn, is gear-connected to the main span driving shaft. With this equipment, operation of the span is considerably slower than when the motor-generator is used, but as in the case of electrical operation, the span can be raised or lowered and held in any desired position.

#### The Machinery and Operating Houses

The machinery house, inclosing the span-driving motors and the gasoline engine unit, is a single-room,

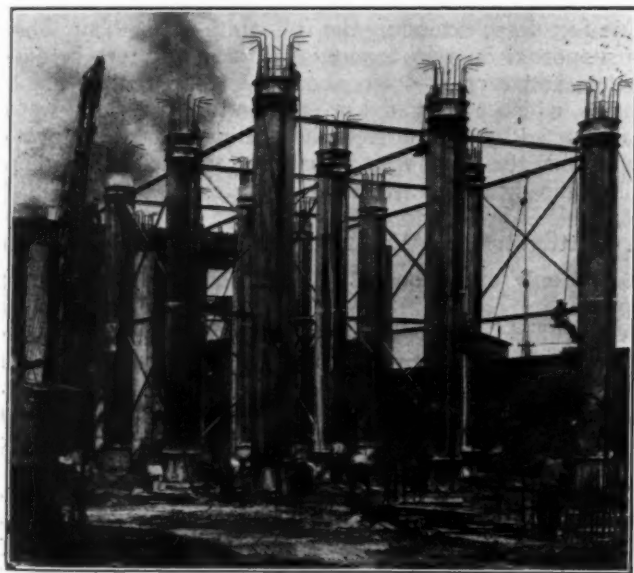


one-story structure, about 18 ft. by 26 ft., located above railway clearance in the middle panel of the lift span. This house, which is of fireproof construction throughout, has a four-inch reinforced concrete floor, and steel side and roof framing which is covered with Johns-Manville  $\frac{1}{2}$ -in. Transite corrugated asbestos board. In addition, the roof is covered with a four-inch course of aerated gypsum, on top of which is built-up asbestos-asphalt roofing. The entire interior of the house is furnished with  $\frac{1}{2}$ -in., flat, Transite asbestos board. All doors and window sash in the house are of steel and are glazed with wire glass.

In order to provide for lifting heavy supplies and equipment up to and within the house, both the inside and exterior of the house are served by four-ton Yale & Towne hand-operated hoists. The hoist within the house operates on a bridge crane, while the outside hoist operates on a trolley beam extending around the house.

The operator's house, which is located above railway clearance in the east tower, is a one and two-story structure, and, like the machinery house, is entirely of fireproof construction. The two-story section of the house, which is about 15 ft. by 40 ft. in plan, is located directly between the main tower trusses, while an additional section, approximately 18 ft. by 38 ft. and only one story high, located at the first floor level of the main house, extends outside of the north truss of the tower and is carried on cantilever girders.

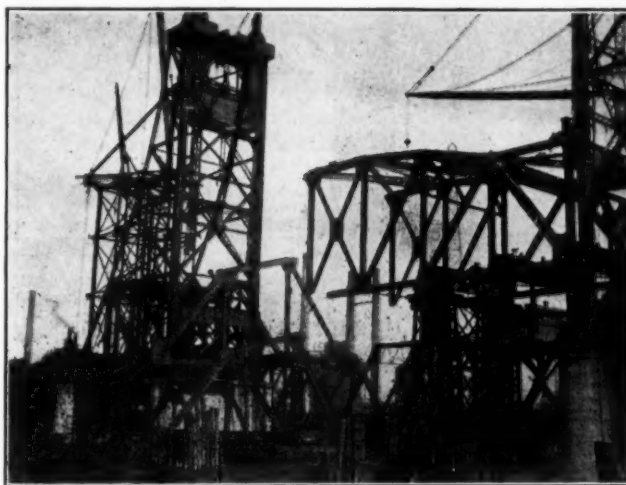
The first floor in the main part of the house is occupied principally by the two generator sets and the transformers, while the upper floor is divided into a relay room, a signal maintainer's room and a toilet. The single story section of the house, extending from the north side of the



Special Viaduct Forms Precluded Extensive Falsework

tower, has one large room in which are all of the bridge controls, an interlocking machine, an illuminated track model, power circuit panels, and a small stove for auxiliary heating purposes. The main heating system of the operator's house is by steam furnished by a small heating plant installed on the east bank of the river under the bridge approach viaduct. The control room was located clear of the tower to give the bridge operator a clearer view of the lift span and the river channel. Like the machinery house, the operator's house is served by a four-ton, hand-operated trolley hoist, operating between the tower trusses, on the east side of the house.

In order to insure the safety of train operation over the bridge, all three of the bridge tracks are protected by color-light signals and split-switch derails, located about 300 ft. each side of the lift span, the center track being signalled for two-way operation so that it can be used as a second east-bound track during the morning rush hours and as a second westbound track during the evening rush hours. In addition, the lift span is equipped with rail locks, bridge locks, and circuit controllers, which are so interlocked with the signals and derails that no



Raising the Final Sections of the Trusses Into Place From Barges

movement of the lift span is possible until the signals and derails are set in the danger position.

Both the rail locks and the bridge locks are of the electro-pneumatic plunger type, similar to a number of other installations made in recent years, including the new four-track double lift-span bridge of the Central of New Jersey over Newark bay, a few miles south of the Lackawanna's new bridge. In this type of locks a plunger is forced through slots provided in the movable and fixed parts of the locks when the lift span is fully seated.

#### Safety Equipment Operation

All of the safety equipment in connection with the bridge is operated by one man through an interlocking machine and a power control bench in the operator's house. The actual raising or lowering of the movable span requires about  $1\frac{1}{4}$  minutes. The raising of the lift span can be accomplished only by following a predetermined sequence of operations, each of which is dependent upon the one preceding it. In the first place, all track signals must be set at stop; then the derails can be opened, following which the operator can release the rail locks and then the bridge locks. These latter operations permit the unlocking of the bridge motor circuit controllers and make it possible for the operator to raise the span. Before rail traffic over the bridge can be restored, all of the various operations mentioned must be performed in the reverse order, the last being the clearing of the track signals. In raising or lowering the span, over-run of the high and low limits of travel is prevented by a series of limit switches in the control circuit, which cut off the power and set the power unit brakes. Further protection in this connection is provided through a lifting leeway of four feet at the top of the towers above the normal maximum opening of the span, and through pneumatic buffers at all four corners of the span, which prevent its being seated with a shock.

While the lift span and the flanking tower spans are

possibly the most striking parts of the new Hackensack River bridge, these units form only a relatively small part of the entire bridge project, for in addition to these spans, the entire river crossing includes three other river spans, 814 ft. of concrete viaduct and 6,100 ft. of approach embankments. On the east side of the river there is only one fixed river span, 110 ft. in length, while on the west side there are two fixed spans, one, 110 ft., and the other, 75 ft. long. All three of these are structural steel deck girder spans. Like the deck of the tower



Laying Asphalt Paving Blocks for Ballast Base on the East Approach

spans, the deck of the three plate girder river spans consists of a reinforced concrete slab, 12 in. thick, which supports a full-ballasted roadway carrying the tracks.

In general, both viaduct approaches to the river spans are of similar construction, consisting of rectangular slab deck spans, 22 ft. 6 in. in length, supported on bents of three columns each. The concrete deck structure, which consists of regular rectangular panels, continuous between expansion joints, is 46 ft. wide, providing room for three bridge tracks on 13-ft. centers, and ample clearance between the outside tracks and the balustrades which line each side of the deck.

The system of spans from one expansion joint to the next was designed for a loading of two E-65 engines per track, followed by a uniform load of 6,500 lb. per linear foot, the loads being so placed as to give conditions of maximum column reaction and maximum bending moments in the spans. The slabs, which are reinforced longitudinally, transversely and diagonally in both directions, are 22 in. thick, with an additional thickness of 10 in. in the drop panels directly over the bent columns.

The balustrades along each side of the viaduct were formed integral with the deck slabs and were made of sufficient section to form a pleasing appearance, and at the same time, to form a safeguard in the event of a derailment. Within the balustrades, a series of ducts carry all power and signal circuits which lead to the lift span or cross the river on the bridge, pull boxes being provided at the signal bridges and in the safety bays provided for the safety of employees.

Drainage of the entire concrete deck, including that over the deck girder river spans and the tower spans, is effected by suitable pitches in the upper surface of the slabs, carrying the water to four-inch openings through the slabs. The entire deck is waterproofed by two-ply asphalt-saturated fabric, which is protected against abrasion and the cutting action of the stone ballast by a course of 8-in. by 4-in. Hastings asphalt blocks,  $1\frac{1}{4}$  in.

thick. These blocks were laid in asphalt and then flushed with hot asphalt to seal all joints. At the sides of the slab, the waterproofing is carried up the sides of the balustrades to a height of 20 in., and is protected by a single course of common brick.

The bents of the viaduct consist of three columns, 3 ft. 8 in. in diameter, spaced 18 ft. center to center. These columns, which are reinforced both longitudinally and spirally, range from 36 to 41 ft. in height. Owing to the unstable character of the soil on both sides of the river, unusual precaution had to be taken in the footings for the viaduct bents. In general, therefore, the columns of each bent rest on continuous concrete piers, which, in turn, are supported on either timber or concrete piles. In addition, all of the piers are tied together longitudinally by sub-surface reinforced concrete struts extending in line with the outside rows of columns. Where conditions were most severe, two such lines of struts were provided to prevent any possibility of the shifting of the bent footings.

In the east viaduct, with the exception of the first three bents from the river span abutment, Raymond cast-in-place concrete piles were used, these ranging from 25 to 38 ft. in length. In the case of the first three east viaduct bents, and at all of the bents in the west viaduct where piles exceeding 40 ft. in length were required, untreated timber piles were used.

At the extreme west end of the west viaduct, where the soil was found to be extremely unstable, and where the superimposed load includes both the live and dead loads of the viaduct and the weight of the earth in the high approach fill extending under the viaduct, special foundations were found advisable. At this point, therefore, which includes the four most westerly bents, the pier at the foot of each bent is a concrete beam, six feet wide by nine feet deep, extending the full width of the bent. This is supported on two concrete shafts, eight feet in diameter, and carried down about 70 ft. to rock. These shafts, which are located at each end of the piers, were constructed by driving steel sheet piling to rock, excavating within the piling with an orange peel bucket, and then filling the excavated area with concrete.

#### A Cantilever Pier Was Necessary in East Approach

The only exception in the uniformity of the viaduct approaches occurs in the east viaduct where it passes over Duffield avenue at an angle of 78 deg., and at the same point extends over a part of Meadow street, which cuts under the south side of the viaduct and intersects Duffield avenue directly under it. In order to keep both of these streets free from obstruction, a 75-ft. steel deck girder span was constructed over Duffield avenue for all three viaduct tracks, and on the east side, these were adjoined with a 75-ft. single-track deck girder span carrying the most southerly track, and a three-panel section of the flat slab type of viaduct carrying the two northerly tracks. This arrangement avoided the construction of piers in Duffield avenue, and necessitated the construction of only one pier which could in any way encroach on Meadow street, this being the east pier at the Duffield avenue crossing.

In order to prevent the encroachment of this pier on Meadow street, a special pier design was developed with a heavy cantilever bracket on the south end of sufficient height to permit the movement of street traffic under it. This cantilever section of the pier supports the abutting 75-ft. girders carrying the most southerly track over Duffield avenue and over the intersecting portion of Meadow street. The cantilever section, which is reinforced to resist a moment of more than 130 million inch pounds,



and a shear of 1 1/3 million pounds, projects 12 ft. 6 in. over the street, is 10 ft. deep at its outer end, 14 ft. deep at its junction with the pier proper, and is 7 ft. 6 in. thick.

The embankment approaches to the viaduct at both ends of the bridge are entirely of earth, and together required the handling of about 500,000 cu. yd. of material. At the west end, the fill is about 4,700 ft. long and about 46 ft. high at its highest point, while at the east end the fill is about 1,400 ft. long and has a maximum height of 42 ft. The embankment on the west side was allowed to take a natural slope throughout its length, but in constructing the east embankment it was necessary to build a high retaining wall, 300 ft. in length, on the south side in order to prevent the encroachment of the fill on Meadow street. Practically all of the grading work in both approaches was carried out with motor trucks, which hauled the filling material direct from numerous construction projects in and about Jersey City.

#### Few Serious Constructional

##### Difficulties Were Encountered

In constructing the new Hackensack River bridge, a number of interesting, although not particularly serious problems arose. The chief problems were in connection with the viaduct footings in the unstable soil of the Hackensack meadows, and the construction of the lift span so as not to interfere with the operation of the old swing bridge, which when in an open position, fouls the lift span in its lowered position. In this latter work, it was necessary, therefore, either to erect the complete lift span on barges and float it into place, or to erect the span at a point high enough between the towers to permit the end of the old swing bridge to pass under it.

As carried out, a combination of these methods was used. In the first place, about two-thirds of the span was erected from the east tower, at an elevation in the clear above the old swing span, and later, the remaining third of each truss of the span, which had been erected on a barge, was floated to the site and raised into position. In erecting the larger part of the span in its final position, it was necessary to block the east half of the old river channel with a crib of falsework, which extended up to support the steel-work at about the mid-point of its length.

All of the steel used in the erection of the bridge, including the deck girders of the fixed river spans, was delivered to the site of the bridge on barges and hoisted into position by derricks. This was done because of the fact that to have awaited the completion of the approaches and the approach tracks for delivering the steel by rail, would have delayed seriously the starting of the steel erection.

Construction of the girderless flat slab viaducts and other concrete work in connection with the bridge involved the placing of about 35,000 cu. yd. of concrete. All of this concrete was specified by strength, as determined by the water-cement ratio. In the columns, slabs, girders and balustrades, 2,500-lb. concrete was used, while 2,000-lb. concrete was used in all footings and abutments, and in the east approach retaining wall.

In constructing the viaducts, all of the column forms consisted of heavy curved steel plate sections, fabricated into continuous hollow shafts, which were carefully lined and braced in position. The slab forms for the viaduct deck were all of wood, but in order to preclude supporting these forms from the ground level, 35 to 40 ft. below, a special form support, patented by the concrete engineer of the Lackawanna, was used. This consists of a ship channel collar around the top of the column form, which

is securely anchored into the top of the completed column by hook bolts. So anchored, the channel collar forms a support for channel beams which extend between the tops of adjacent columns. These channels carry small, closely-spaced I-beams which span the distance between columns, and which, in turn, carry the timber formwork for the deck slab and the drop panels.

All of the work in connection with the bridge was designed and carried out under the general direction of G. J. Ray, chief engineer of the Lackawanna. The actual design work, including that of the lift and tower spans, and the operating machinery, was done by Waddell & Hardesty, consulting engineers, New York, under the direction of J. L. Vogel, bridge engineer, and M. Hirschtal, concrete engineer, both of the Lackawanna, who also designed the concrete approach structures. The Foundation Company, New York, constructed all of the river piers, including the four pneumatic caissons, while H. F. Curtis Company, New York, constructed all other masonry work with the exception of the concrete piles in the approach footings, which were placed by the Raymond Concrete Pile Company, New York. All of the steel-work of the bridge was fabricated and erected by the American Bridge Company, which also had the contract for installing all of the electrical and control equipment. The electrical equipment was furnished by the Crocker-Wheeler Company, while the bridge control equipment was supplied by the General Electric Company. All of the signal and interlocking equipment in connection with the bridge was furnished by the Union Switch & Signal Company, and was installed by the signal department of the road. The actual construction work on the project was carried out under the general supervision of M. H. Doughty, division engineer, and under the direct supervision of W. H. Speirs, resident engineer, both of the Lackawanna.

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Mountain Type Locomotive on the D. & R. G. W.

# New York Central Increases Surplus

*Now amounts to 220 million—Stock 38 percent of total capitalization—Improved operating performance*

**T**HE freight transportation performance of the New York Central, as measured in gross ton-miles, has been running somewhat lower thus far this year than it did in the same period of 1927. Going back to 1926, however, the cumulative totals of operating statistics for the first seven months show a total gross ton-miles comparable to the total for the first seven months of the current year. The total for the first seven months of 1928 is 32,214,393 thousand and that for the same period in 1926 is 32,612,628,000 a decline for the 1928 period of but 1.2 per cent in gross ton-miles.

## Operating Economies

Handling virtually the same gross ton-mileage, however, the road was able to effect an economy of 6.5 per cent in freight train-miles during the current year as compared with the similar period in 1926. Freight locomotive-miles were reduced 7.8 per cent and freight train-hours decreased 15.5 per cent.

## Freight Train Performance

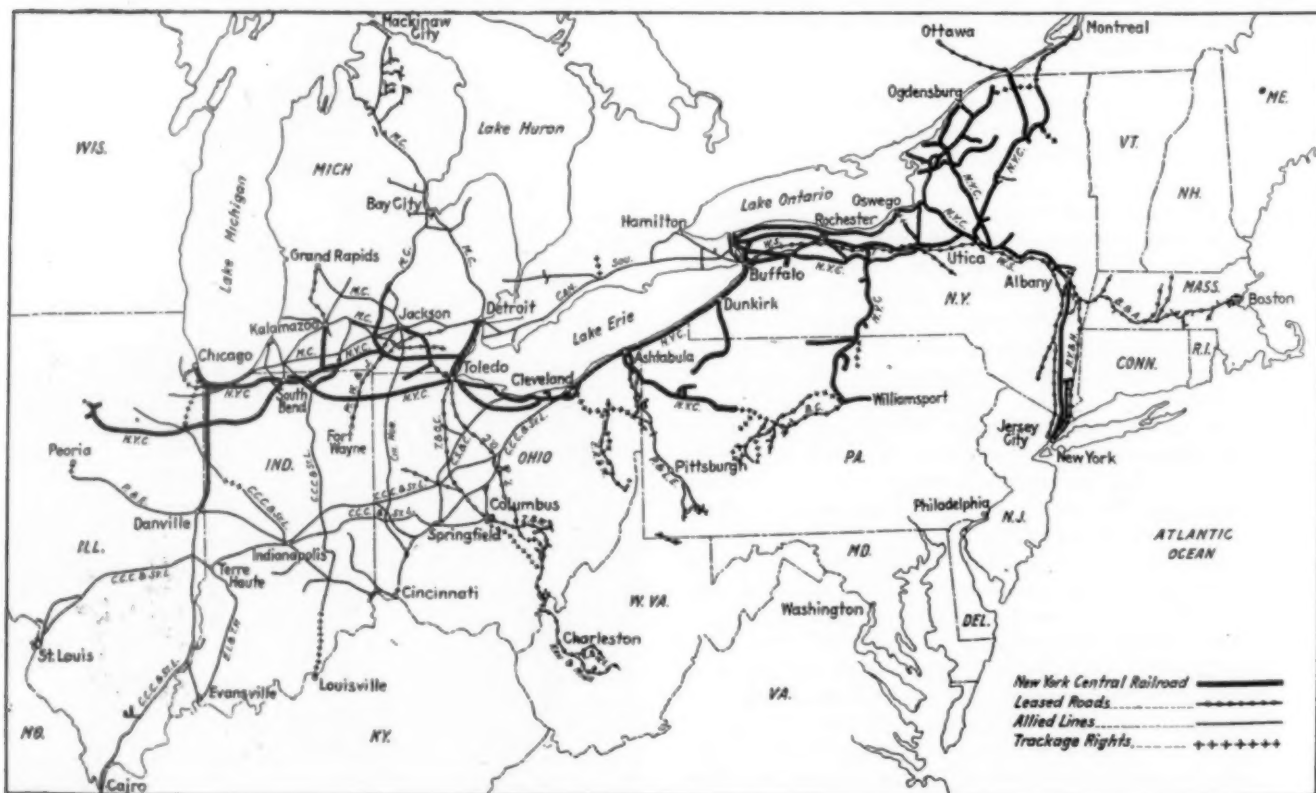
The average number of cars per freight train in the first seven months of 1926 was 58.5; in 1928 it had risen to 63.3—an improvement of 8.2 per cent. Gross tons per train rose to 2,306—an increase of 5.6 per cent. Train speed averaged 13.3 m.p.h., an increase of almost 11 per cent, and gross and net ton-miles per train-hour rose 16.8 per cent and 11.6 per cent respec-

tively. Coal consumption per 1,000 gross ton-miles declined 10.6 per cent. These comparative figures are set forth in detail in Table I, which tabulation discloses that the improvements were effected in spite of a decrease in the average load per car and in the ratio of loaded to total car-miles.

At the end of September, 1926, the New York Central had 1864 freight locomotives of an average tractive effort of 47,637 lb. At the same date in the current year it had reduced the number of locomotives to 1722—a reduction of 7.6 per cent—and their average tractive effort had increased to 48,473 lb.

## Passenger Earnings Hold Up Well

Freight revenues for the first eight months of the current year totaled \$152,558,297, which is 4.5 per cent less than for the same period in 1927, 5.7 per cent under the 1926 eight-month total and 0.9 per cent lower than the first eight months of 1925. The road has been considerably more fortunate than the average with its passenger business. In the first eight months of the current year its passenger revenues totaled \$64,720,275, which figure is actually somewhat above the total for the same period in 1925 and is but 2.7 per cent and 3.3 per cent lower respectively than the eight-month totals of 1927 and 1926. The maintenance of passenger revenues to a satisfactory level in the face of increasing highway competition is no doubt due to an increasing commutation traffic and to the excellent high-



The New York Central and Subsidiaries



speed, long-distance trains which the road operates either alone or with subsidiary companies connecting many of the most populous centers of the country.

### Operating Expenses

Maintenance of way expenses, maintenance of equipment expenses and the operating ratio have varied during the past four years as follows:

Year	Maintenance of Way Exp.	Maintenance of Equip. Exp.	Oper. Ratio, %
1928	\$32,978,032	\$53,360,284	76.2
1927	35,583,461	53,148,920	75.5
1926	34,045,154	56,089,407	74.3
1925	32,783,342	52,319,171	74.6

Net railway operating income for the eight-month period in 1925 was \$44,214,019; in 1926, \$47,494,100; in 1927, \$43,430,038; and in 1928, \$40,069,895.

### Increased Road and Equipment Investments

The New York Central's increased investment in road (not including leased lines) in the year 1923 was \$10,399,283 and its equipment investment \$37,027,739. In 1925 the road investment increase was \$12,107,257 and equipment \$8,111,331; in 1926, road \$11,761,197,

development at Selkirk is an outstanding instance of such an improvement serving both purposes, and the 11 per cent increase in average freight train speed obtained in the first eight months of 1928 as compared with the same period of 1926 reflects the effectiveness of the measures which have been taken toward these ends.

In 1927 the New York Central's tonnage of manufactures and miscellaneous represented 26.9 per cent of the total; bituminous coal, 36.6 per cent; products of mines, 57.6 per cent; products of agriculture, 7 per cent; and l. c. l., 3.3 per cent.

### Increase in Non-Operating Income

The New York Central's non-operating income in 1927 totaled \$42,608,679, being 40.8 per cent of gross income and an increase of 46.5 per cent over the preceding year. The increase was extraordinary to the extent that included in it was a 50 per cent extra dividend on the Michigan Central stock, virtually all of which the New York Central owns, as well as a 10 per cent extra dividend on stock holdings in the Pittsburgh & Lake Erie and a 2 per cent extra by the Reading. On the other hand the regular rate of the Michigan Central was raised to 40 per cent from 35 per cent. Another increase came in rentals from property in the Grand Central zone, New York City, and such income hereafter should show still further increases as the result of continued construction of large buildings on New York Central property.

### Corporate Surplus 220 Million

In 1922 the New York Central carried a surplus of \$7,643,871 to profit and loss after dividend payments. The following year it carried over \$27,748,777; in 1924, \$18,399,461; in 1925, \$21,768,272; in 1926, \$28,691,046; and in 1927, \$27,942,658. Corporate surplus at the end of 1927 stood at \$220,524,740, representing 52.3 per cent outstanding capital stock and 20 per cent of total capitalization.

### Financing by Stock Sales

Not only has the road shown its financial conservatism by thus building up its surplus but, actuated by similar motives, it has done its financing in late years by the issue of capital stock, in this manner providing for new capital needed and meeting bond maturities. Funded debt totaled \$776,916,391 at the end of 1924

Table 1—Comparison of Selected Freight Operating Statistics

	First Seven Months, 1928	First Seven Months, 1926	Per Cent of Change Inc. Dec.
Mileage operated	6,459	6,482	0.4
Gross ton-miles (thousands)	32,214,393	32,612,628	1.2
Net ton-miles (thousands)	13,366,706	14,167,514	5.6
Freight train-miles (thousands)	13,973	14,941	6.5
Freight locomotive-miles (thousands)	16,706	18,124	7.8
Freight car-miles (thousands)	870,096	858,206	1.4
Freight train-hours	1,050,147	1,242,070	15.5
Car-miles per day	28.8	28.9	...
Net tons per loaded car	25.1	26.3	4.6
Per cent loaded to total car-miles	61.3	62.9	2.5
Net ton-miles per car day	44.3	47.7	7.1
Freight cars per train	63.3	58.5	8.2
Gross tons per train	2,306	2,183	5.6
Net tons per train	957	948	0.9
Train speed, miles per train-hour	13.3	12.0	10.9
Gross ton-miles per train-hour	30,676	26,257	16.8
Net ton-miles per train-hour	12,728	11,406	11.6
Lb. coal per 1,000 gross ton-miles	110	123	10.6
Loco. miles per loco. day	56.0	57.6	2.8
Per cent freight locos. unserviceable	24.7	21.8	13.3
Per cent freight cars unserviceable	5.3	4.0	32.5

equipment \$24,342,913; in 1927, road \$19,160,169 and equipment \$16,876,275. It is to be noted that of important improvements undertaken by the New York Central in recent years considerable attention has been paid to improving the service to patrons as well as in effecting operating economies. The great terminal de-

Table I—New York Central Railroad Company, Operating Results, Selected Items, 1920 to 1927

	1920	1921	1922	1923	Including operating results of Boston & Albany and Ohio Central Lines				
					1923	1924	1925	1926	1927
Mileage	5,684	5,704	5,710	5,700	6,890	6,920	6,931	6,928	6,906
Total operating revenues	\$338,624,456	\$292,130,995	\$316,620,098	\$365,175,188	\$421,034,784	\$369,606,930	\$385,994,505	\$399,537,749	\$383,377,311
Total operating expenses	317,799,173	221,768,390	250,400,470	278,602,021	325,917,241	279,970,163	290,440,958	298,931,038	293,399,836
Net operating revenues	20,825,284	70,362,605	66,219,628	86,573,167	95,117,543	89,636,767	95,553,546	100,606,711	89,977,474
Taxes		18,132,163	17,361,160	20,053,594	22,656,867	23,289,540	25,343,923	26,881,808	25,193,779
Railway operating income		52,176,357	48,805,052	66,421,414	72,355,699	66,167,887	69,992,348	73,557,823	64,677,578
Equipment rents, net Dr.		961,047	1,233,223	4,126,180	4,482,667	4,602,564	5,079,852	4,693,333	5,831,379
Joint facility rents, net Cr.		3,722,724	2,999,716	3,520,566	3,116,069	3,069,751	3,008,054	3,294,002	2,977,628
Net railway operating income		54,938,035	50,751,544	65,815,799	70,989,101	64,635,074	67,920,550	72,158,492	61,823,827
Dividend income	6,655,251	6,316,257	10,309,803	14,464,455	14,911,850	14,388,778	15,318,325	18,224,255	31,260,564
Total non-operating income	15,459,803	20,121,944	19,051,274	25,317,305	24,668,309	24,123,217	25,419,095	29,076,690	42,608,679
Gross income	65,109,739 <sup>1</sup>	75,097,499	69,951,089	91,343,388	95,867,694	88,921,304	93,430,020	101,257,458	104,477,551
Interest on funded debt	30,736,911	33,598,469	34,855,173	33,881,249	33,881,249	34,191,311	28,684,284	29,268,397	29,292,539
Total deductions from gross income	48,053,753	52,801,813	49,315,903	46,003,961	50,528,267	49,670,904	44,802,796	45,593,417	45,912,405
Net income	13,734,688	22,295,686	20,635,186	45,339,427	45,339,427	39,250,400	48,627,224	55,664,041	58,565,145
Dividends	12,479,615	12,479,641	12,876,985	17,432,978	17,432,978	20,728,835	26,732,833	26,827,815	30,462,783
Income balance	1,250,256	9,747,588	7,643,871	27,748,778	27,748,778	18,399,461	21,768,273	28,691,047	27,942,658
Rev. ton miles (thousands)	22,567,929	14,831,625	17,648,981	22,764,912	26,321,575	21,095,678	22,463,487	23,634,239	22,300,002
Rev. passenger miles (thousands)	3,094,163	2,608,080	2,572,565	2,758,223	3,193,533	3,122,308	3,168,122	3,279,968	3,273,593
Rev. per ton mile (cents)	0.930	1.208	1.122	1.035	1.040	1.077	1.069	1.051	1.051
Operating ratio	93.84	75.91	79.09	76.29	77.41	75.75	75.24	74.82	76.53

<sup>1</sup> Includes standard return or guaranty. Standard return was \$55,802,630.

and \$684,629,139 at the end of 1927. Capital stock rose from \$249,849,360 at the end of 1921 to \$421,285,435 at the end of 1927. The ratio of capital stock to total outstanding capital mounted from 25.03 per cent at the end of 1920 to 38.09 per cent at the end of 1927.

The application to the Interstate Commerce Commission for authority to lease the Michigan Central, the Big Four and other controlled lines is still pending.

In spite of a slight lull in traffic and earnings the New York Central continues to strengthen its financial position and to carry out its programs for improved service to shippers and more economical operation. A revival in traffic, therefore, should find it able to make continued improvement in its handling—from the standpoint of operating economy as well as of service to its patrons.

## A New Car-Spotter

EASE of operation characterizes a car-spotter recently brought out by the Foote Bros. Gear & Machine Company, Chicago. This machine, which has been designated as the IXL Hygrade car-spotter, is operated by hooking one end of a rope to the car, wrapping the other end around the capstan of the car-spotter, starting the motor and holding back gently



The New Car-Spotter Forms a Compact Unit

on the free end of the rope that is wrapped around the capstan. The capstan pulls from any direction, depending upon the way in which rope is wrapped around it.

### Parts of the Machine

The machine consists of a motor, an anti-friction bearing type vertical worm reducer and a capstan, compactly constructed and mounted on a cast iron base. The worm gears are of chilled and cast bronze. The worms are of nickel steel, carbonized, hardened, ground and polished, insuring perfect tooth contact and quietness in operation. All unnecessary friction is eliminated in the shaft bearings to take care of radial thrust loads on the worm and worm gears.

The motor is connected to the worm of the car-spotter unit through an enclosed spur gear drive, which provides part of the reduction. The final reduction for the running speed of the capstan is obtained through the worm and worm gear of the reducer. The gearing is fully enclosed in a dust-proof, oil-tight, cast-iron case.

These car-spotters are made in two sizes, one having 3,000 lb. and the other 6,000 lb. rope-pull. The capacity of the spotters depends, of course, upon the degree of curvature and grade of the track.

## Freight Car Loading

WASHINGTON, D. C.  
REVENUE freight car loading remained during the week ended October 27 at practically the same figure as in the preceding week, totaling 1,161,976 cars as compared with 1,162,095 cars. Larger loading of grain, coal, coke and forest products was offset by a decline in loading of other commodities. The total for the week represented an increase of 49,160 cars over the corresponding week of last year, for which increased loading of coal and ore was primarily responsible. A decrease of 46,902 cars is shown as compared with loading in the corresponding week of 1926, all commodity classifications, with the exception of miscellaneous freight, contributing to the decline. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

### Revenue Freight Car Loading

Districts	Week Ended Saturday, October 27, 1928		
	1928	1927	1926
Eastern .....	260,074	245,427	269,691
Allegheny .....	233,259	215,224	243,066
Pocahontas .....	65,124	57,808	64,884
Southern .....	159,709	161,503	169,676
Northwestern .....	170,487	166,327	182,871
Central Western .....	178,175	174,359	183,919
Southwestern .....	95,148	92,168	94,771
Total Western Districts .....	443,810	432,854	461,561
Total All Roads .....	1,161,976	1,112,816	1,208,878
Commodities			
Grain and Grain Products .....	53,096	56,299	56,677
Live Stock .....	38,054	38,171	39,993
Coal .....	207,682	182,136	236,734
Coke .....	10,546	9,287	13,314
Forest Products .....	67,870	69,299	72,899
Ore .....	59,391	42,350	62,611
Merchandise L. C. L. ....	269,036	268,518	271,328
Miscellaneous .....	456,301	446,756	455,322
October 27 .....	1,161,976	1,112,816	1,208,878
October 20 .....	1,162,095	1,129,055	1,200,941
October 13 .....	1,190,127	1,120,007	1,202,780
October 6 .....	1,186,598	1,102,994	1,174,928
September 29 .....	1,196,768	1,126,903	1,180,049
Cumulative total, 43 weeks.....	42,917,925	43,637,626	44,360,156

The freight car surplus during the period ended October 23 averaged 93,204 cars as compared with 85,825 cars on October 15. The total included 49,064 box cars, 17,229 coal cars, 14,805 stock cars and 4,208 refrigerator cars.

### Record Car Loading in Canada

Revenue car loadings at stations in Canada reached their high mark for 1927 in the fourth week of October, with a total of 90,656 cars. Up to October 20 this year that record had been passed five times and for the week ended October 27 a new high record was made when loadings reached 97,093 cars. Compared with loadings for the week ended October 29 last year total loadings for the week ending October 27 this year were heavier by 6,437 cars.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada		
October 27, 1928 .....	97,093	40,181
October 20, 1928 .....	92,608	41,749
October 13, 1928 .....	92,121	42,800
October 29, 1927 .....	90,656	38,485
Cumulative Totals for Canada		
October 27, 1928 .....	3,001,275	1,695,458
October 29, 1927 .....	2,751,449	1,618,959
October 30, 1926 .....	2,641,995	1,611,080



# The Public's Stake in Railroad Prosperity\*

*Adequate rates, elimination of unnecessary expenditures  
and restraint of unfair competition necessary  
in the public interest*

By J. M. Davis

President, Delaware, Lackawanna & Western

MUCH of the success of all business and all communities depends upon efficient and dependable transportation, both now and in the future; hence it is profitable to all to look behind the scenes, at the business of conducting rail transportation.

The question of taxation is growing more and more serious with each succeeding year. It is a very serious item in our expenses. Total taxes paid by the Lackawanna for 1927 aggregated \$7,457,093. It represents an increase of 91 per cent over the figures for 1918, or ten years ago, and is equivalent to 8.8 cents per dollar of gross revenue.

Stated another way, this was equal to 30.4 per cent of every dollar of operating income, after operating expenses were deducted. To be more specific and reduce this to a tangible business basis, the amount required to pay the road's assessed taxes for that one year—1927—was equivalent to the average gross collections received for the movement of 3,398,238 tons of freight.

The extent to which this railroad, and most all others, for that matter, supports the school systems—through the taxes it pays, does not seem to be generally realized. Neither does the fact that the railroads are subject to the tax assessing power of not only the federal and the state governments, but also to that of the villages, boroughs, towns, cities, townships and counties.

## Grade Crossings

The elimination of grade crossings is another matter that comes in for much discussion. Grade crossings generally are desirable public improvements. The need for more of them, in certain sections, is obvious, but, their cost not only is alarming, but also very hard on the pocketbooks of the taxpayers.

Since 1910 the Lackawanna has spent more than \$29,000,000 in the elimination of grade crossings in the states of New York, Pennsylvania and New Jersey. The cost of such work usually is divided between the state, the community, and the railroad, the latter paying the major portion. Notwithstanding this expenditure of \$29,000,000 for grade-crossing elimination, on the part of the Lackawanna alone, only 36 per cent of the grade crossings on the railroad, in the states mentioned, have been eliminated. This expenditure, it must be remembered, does not produce one single dollar of revenue.

The American Railway Association estimates that there are approximately 233,000 railroad highway crossings in the United States. To separate all of them would require generations of time and involve an expenditure of something like \$19,000,000,000.

Unbelievably large sums of money could be saved by the taxpayers in connection with the furtherance of necessary grade-crossings elimination work. For instance, in accord with present practice, the construction of every new highway of any considerable length or importance automatically includes the construction of one or more new grade crossings. Is this necessary or to the best interests of those whose tax moneys go into the construction of both the highway and the crossing to eliminate the grade? I claim not and here is the reason why.

In former horse-and-buggy days, frequent crossings were a great convenience and saved much time, but in these days of fast-moving, motorized vehicles, an extra mile or two is of practically no consequence. Conditions have changed. The time element has lost its importance and it is no longer either necessary or desirable that every new highway cross directly every railroad that it happens to meet up with or, for that matter, that every existing highway should do likewise. Rather, it seems to me, that by the adoption of the simple plan of restricting the construction of new crossings, closing many little-used crossings which now exist and connecting two or more adjacent highways by the building of a marginal highway paralleling the railroad and concentrating the highway traffic upon these unified crossings, numerous unnecessary and expensive crossings could be eliminated, without noticeable detriment to the highway traffic.

## Should Rates of Prosperous Industries Be Raised?

The Interstate Commerce Commission holds that 5¾ per cent is a fair annual return upon its valuation of the railroad properties in the nation. In no year since the war has the railroads as a whole earned that return. If one or more roads happen to earn more than 6 per cent return, the recapture clause operates with automatic and death-like precision and one-half of the overage has to be paid to the Commission; but—if any one or all of the roads fail to earn the 5¾ per cent return the Commission does *not* come to the rescue and make up the shortage.

## Railways Alone in Limitation of Returns

Why should the net returns of the railroads be limited and those of other industries be permitted to remain unlimited?

Prior to the world war, railroad rates were regulated in disregard of the needs of the carriers. As a natural consequence, their development lagged and up to the return of the properties to their owners by the government in 1920 and, in fact, until such time thereafter as was necessary to enable the managements to restore and

\* Abstract of an address delivered before Elmira, N. Y., business men on October 15.

deliver service, the country suffered losses totaling staggering figures because of inadequate and unsatisfactory railroad service.

#### Service Dependent Upon Earnings

Since 1923 the railroads have met their obligations and supplied transportation that has been the most efficient and the most dependable that any country ever has enjoyed. This, despite the fact that many rates have been reduced and wages and the cost of almost everything that the railroads have to buy has greatly advanced. Shippers have derived untold benefits from this service and rates and employees have benefitted tremendously by the advanced wages. Forty-nine percent of the Lackawanna's gross revenue is now required to meet its pay roll. Meantime, the operating income of the railroads has not increased commensurately with the increased investment—about \$4,000,000,000—in the properties which was necessary to enable them to function as they have.

#### Adequate Revenues Vital

These increases in facilities and improvements in service have been taken more or less for granted and perhaps without the proper appreciation of the revenue requirements which are a vital necessity if this same character of service is to be maintained, and, if possible, improved, and perhaps also without sufficient thought as to the absolute necessity for the maintenance of credit that is imperative to make adequate capital readily available.

This is a factor to which careful consideration should be given if we are to avoid returning to a condition which existed just prior to the war, when insufficient revenues were reflected by decreased credit, which in turn, cut down capital expenditures and this condition naturally brought about a let-down in service. It is entirely within the realm of possibility for the same set of conditions, carried far enough, to produce the same set of results.

#### Some Major Problems

Some of the major problems which now confront us and which to us seem rather unfair, are the insistent and persistent demands for a lower basis of rates and higher wages, and the subsidizing of various new forms of transportation by either the government or the public.

As an example: A national association recently filed a brief with the Interstate Commerce Commission for a lower basis of rates on the commodity in which it is most interested. In urging this relief the argument was advanced that although the present rates are on a fairly profitable basis, the industry continues to suffer from the effects of the post-war depression which seriously affected it. It was pointed out that those engaged in this industry are still laboring to get out of the rut into which they were thrust by the war and for which the railroads were no more to blame than was any other industry. Yet they seemed to feel that the railroads offered the proper avenue for escape from that condition. Such a situation appears to me to be carrying the problem of fixing rates entirely too far, because the purpose of the application, in the final analysis, indicates the desire of the association to have the railroads add to the profits of that association sufficient to facilitate the payment of past debts.

If that application should be granted, would it be any more than fair that rates be raised on commodities on which the prices are higher than they were when the present rates were established?

Some months ago, the Interstate Commerce Commission ordered a reduction in the freight rates on deciduous fruits from California because the prices of them were too low. If such policy is fair, then why should there not be an advance in the rates on commodities where the prices of them are high? They say "It is a poor rule that will not work both ways."

#### Other Forms of Transportation Favored

Another matter on which I feel that the public should be properly informed and to which it should give serious consideration is the radically different methods of treatment which have sprung into practice in dealing with competing lines of transportation, compared with the treatment that is accorded the railroads. These new agencies fill a developing need in the general scheme of things, hence, have come to stay, but I maintain that unless and until their rates and service are scrutinized and governed as religiously as are those of the railroads and they are required to pay a fair proportion of the cost of the highways used and which are constructed with the tax-payers money, that you taxpayers are, in effect, unintentionally perhaps, but certainly, a party to a subsidy.

Operating under present conditions, these agencies create unfair competition in many localities. Some of them are of comparatively recent development and it is rather to be expected that their operation will savor of certain evils and irregularities which go hand in hand with newness and pioneering.

Given a fair deal, to which we certainly are entitled—and which I believe the public intends that we should have, the railroads do not fear such competition.

In this connection, you will recall that when electric lines were established, the prediction was made that they would put the steam railroads out of business. As a matter of fact, they created new business. The bulk of the traffic will naturally follow that traffic artery which has the capacity for large volume, because in that way only will it be possible to maintain low freight rates. Particularly is this true in a country like this, because of the relatively longer hauls.

I have no fear that the railroads will be dislodged. Neither do I fear honest competition, because it is merely an incentive to greater accomplishment.

#### Subsidizing Railroads Cheaper Than Building Waterways

The people of Elmira paid a portion of the cost of providing the State Barge Canal and its service as well as of the deficit which results from its operation, and yet, it is clearly evident that if the regular rail rate was paid by the tax-payers for transporting the traffic which the canal carries and the canal service abandoned, the tax-payers would be ahead of the game. In the face of such a condition, it is not apparent that the canal renders a necessary service, and yet appropriations for its operation continue to be made.

Railroad managing would be an everlasting picnic and railroad executives would live longer and die happier if their short comings and deficits were promptly paid off and over-looked by governmental or public subsidy.

A MOTION PICTURE showing operations in the boring of the Cascade tunnel of the Great Northern, through the mountains in the State of Washington, has been prepared by E. I. du Pont de Nemours & Company of Wilmington, Del., and is to be had free of charge upon application to the advertising department of the company, Wilmington. This film is on a single reel requiring 15 minutes for showing.



# Great Western Reduces Casualties 88 Per Cent in 11 Years

*Without paid safety organization, injuries to employees have decreased since 1917 from 693 to 81*

**T**HE Chicago Great Western, in the 10 years from 1917 to 1927, has reduced the reportable injuries to employees from 693 to 81, with a corresponding decrease in the total reportable casualties, including those to outsiders, from 779 to 167. In 1927 the Great Western attained the remarkably low employee casualty rate of 4.38 per million man-hours as compared with a casualty rate of 19.04 per million man-hours for all Class 1 railroads in the United States.

On one division, the Western division, there has not been a fatal accident in regular railway operation since September 9, 1920. This same division maintained a record of 195 days, from September 12, 1927, to March 14, 1928, without a single reportable injury to an employee. In 1924, this division was awarded the E. H. Harriman silver memorial medal for the best record in accident prevention among divisions of Class 1 railroads. Other units have made similar enviable records.

The Southern division extending from Oelwein, Iowa to Kansas City, Mo., recently closed a record of 197 consecutive days working 382,428 man-hours without a reportable injury to an employee. At the time this was written, September 13, 1928, the Oelwein (Iowa) terminal had gone since July 10, 1927, without a reportable injury. The mechanical department of the system had the lowest casualty rate of any railroad in the United States in 1927. For the first seven months

of 1928 the casualty rate to employees was 54 per cent below that of 1927.

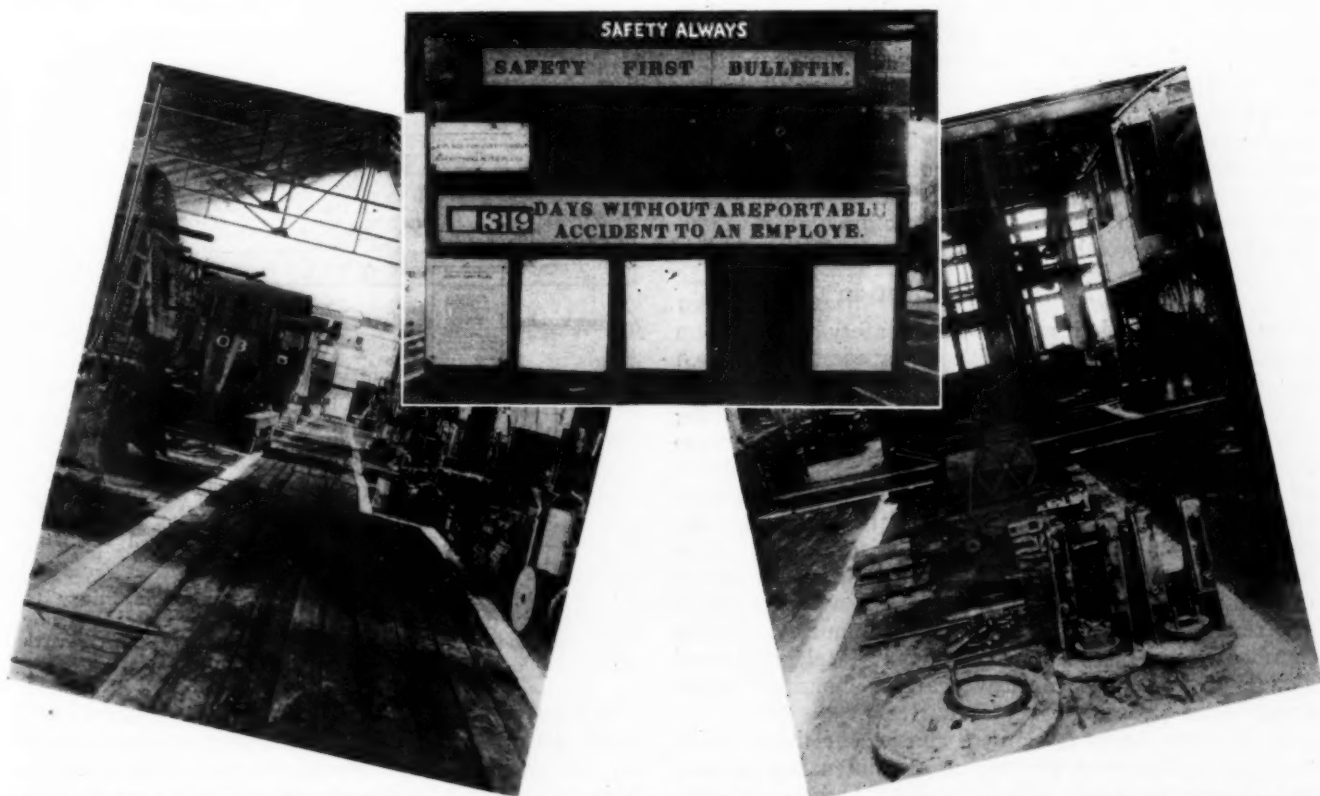
These results have not been obtained in a day but are rather the outgrowth of a persistent pursuit of the safety idea over a long period of years. A definite and concerted move to prevent accidents was first made in 1912. About two years were required to get the work fairly organized and to produce results. In 1914 the reportable casualties numbered 1,020, the next year they were 858 and in 1916, 956. The detailed results of the safety work from 1917 to 1927 are best shown by the following table of casualties to employees and outsiders:

Year	Em- ployees	Tres- passers	Pas- sengers	Others	Total Outsiders	Total
1917	693	20	14	52	86	779
1918	614	20	37	41	98	712
1919	444	17	26	30	73	517
1920	542	8	61	32	101	643
1921	233	13	25	43	81	314
1922	343	18	4	52	74	417
1923	290	13	38	34	85	375
1924	234	12	3	27	42	276
1925	164	28	12	39	79	243
1926	126	21	5	38	64	190
1927	81	17	26	43	86	167

Service		Casualties per Million Man-Hours	
		1925	1926
Train and Train Service (Road).....		42.24	39.91
Train and Train Service (Switching)...		37.91	25.85
Industrial (Other than Mechanical)....		7.03	4.46
Industrial (Mechanical) .....		4.36	3.21

The best results in the reduction of accidents have been obtained since 1921 when the safety work ceased



Above: Bulletin Board Which Is Typical of Those Located Throughout Shops and Roundhouses. Below: Two Views Showing the Care Taken in the Oelwein Shops to Keep Material From the Passageways and Within the White Lines

to be a sideline to be pushed only when the time and opportunity offered. At that time the idea took firm root among all employees and officers that when the safety of operation improved the efficiency of operation also improved. In the past seven years the entire railroad has been operated with that idea as a cardinal principle.

All of this has been accomplished without the serv-

supervisors of track, the claim agent, the general mechanical foreman, the general car foreman and other representatives of the operating and maintenance departments who may be selected as members. Each of these committees meets monthly and sends a monthly report to the executive safety committee.

The committee at the Oelwein terminal is made up of the superintendent, as chairman, the general yardmaster, the supervisor of bridges and buildings and the supervisor of track, while the Oelwein shops committee is made up of the superintendent of shops, who is chairman, the roundhouse foreman, the shop foreman, the car foreman, the storekeeper and representatives from the shop crafts. Both of these committees meet once a month and report at the same intervals to the executive committee.

The proper functioning of the division, shop and terminal committees is aided by the type of operating organization prevailing on the Great Western. The absolute divisional form of organization is in effect, with every supervisory officer on the division reporting directly to the superintendent.

The Great Western follows a number of practices in the inculcation of the safety-first idea in the minds of its employees which are peculiar to that railroad alone. Each morning at 10 o'clock when the office of the division superintendent obtains the daily car report a

CHICAGO GREAT WESTERN RAILROAD COMPANY  
RAILROAD BULLETIN No. 129

Eight thousand employees of the Chicago Great Western Railroad Company, have signed the following pledge to safeguard the person and property of fellow employees, passengers and other patrons of the Road, as well as to look out for their own safety.

CHICAGO GREAT WESTERN RAILROAD COMPANY  
TO HELP THE SAFETY MOVEMENT ON OUR RAILROAD

I, \_\_\_\_\_, hereby  
promise, upon my honor to observe this Safety Pledge:

1. To think always of my own safety and of the safety of my fellowman.
2. To watch for unsafe conditions, and unsafe practices by others and to take proper measures for their correction.
3. To keep the machinery and the tools I work with in a safe condition.
4. To wear goggles in accordance with instructions.
5. To attend at once to all injuries, including the most trivial, that I may sustain, whether on the Railroad or in my home.

H. L. HOWARD,  
President.

Chicago, August 1, 1928.

#### Safety-First Pledge Signed by Great Western Employees

ices of a paid safety organization. There is no one officer on the Great Western who devotes full time to the promotion of the "Safety-First" movement. The general, divisional and supervisory officers constitute the entire safety staff, which has become such a highly organized group that every employee on the railroad can be said to be a part of it. The safety idea has taken such firm root that the upholding of the divisional, terminal and shop safety records has become a personal matter with every man from section man, mechanic and clerk up to the superintendent.

#### The Safety Organization

As on many other railroads the safety organization is made up, first of an executive safety committee which has final jurisdiction over the safety activities of the railroad. It consists of the general manager, the assistant general manager, the chief engineer, the superintendent of telegraph and signals, the superintendent of motive power, the general storekeeper, the superintendent of Oelwein shops, the general claim agent and the superintendents of the various divisions, who are in addition chairmen of their respective division safety committees. The general manager is not necessarily chairman of this executive safety committee. For a number of years the superintendent of telegraph and signals has acted as executive safety committee chairman. The committee meets quarterly.

A division safety committee consists of the superintendent, as chairman, the engineer maintenance of way, the master mechanic, the trainmasters, the chief dispatcher, the road foreman of engines, the supervisor of bridges and buildings, the supervisor of signals, the

CHICAGO GREAT WESTERN RAILROAD COMPANY  
SAFETY ALWAYS THINK SAFETY ALWAYS

**MONTHLY SAFETY REPORT**

This report due in the office of the Superintendent on the 10th day of each month.

1. Date of Inspection \_\_\_\_\_ Station \_\_\_\_\_
2. Condition of Waiting Room and Furniture \_\_\_\_\_
3. Condition of Platform \_\_\_\_\_
4. Condition of Lights \_\_\_\_\_
5. Condition of Stairs \_\_\_\_\_
6. Have we any \_\_\_\_\_ points?
18. Remarks \_\_\_\_\_
19. Recommendations \_\_\_\_\_

(Signed) \_\_\_\_\_ Chairman

USE BACK OF REPORT WHERE NOT ROOM TO COVER ABOVE.

#### Blank Used for Reporting Monthly Station Inspections

telegram is sent to every office and every station on that division, stating the length of time since the last reportable casualty. If the previous day was free from accidents the daily safety message is in this form:

"Forty days without reportable injury to employee."  
(Signed)....., Supt."

If the safety record has been broken by a reportable injury the message has this context:

"Record of forty days without reportable injury to employee broken on May 27 by brakeman at Monoville who crushed toes while opening drawbar knuckle with foot."  
(Signed)....., Supt."

A copy of this telegram is given to the crew of every train, both passenger and freight, as it leaves its terminal. At every station the telegram is posted on the bulletin board while copies are given to every section foreman to read to his gang and to every signal maintainer to show to the men in his force. Copies are also tacked



on bulletin boards in all roundhouses, shops and yard offices. In short, every foreman, whether he has 1 or 20 men under his jurisdiction, receives a copy of the telegram and it is considered part of his duties to see that his men are apprised of its contents. This message serves as a daily reminder of the importance of safety in railway operation, amply justifying its additional trouble and expense, the officers believe. It places safety before the men as a live, current topic linked up with the preservation of their operating unit's safety record in competition with the other units of the railroad.

The committee idea in safety work is carried down to the smallest unit of the railroad—the station. The Great Western was one of the first roads to establish station safety committees. They are made up of the agent, who is chairman, the track foreman and one or more other employees at that point. The committee makes a monthly inspection of the station premises and sends a report to its divisional committee on a printed form which makes it practically impossible for them to overlook any unsafe conditions.

These station committees, through their periodical inspections, form the backbone of the recommendations and suggestions for changes in physical property or in practices which are considered by the division committees. Definite action is taken by the division committee on every suggestion or recommendation that is made to it—none are ignored or tabled. Unsafe conditions or practices which cannot be corrected locally are referred to the executive committee. Prompt and definite action on reports maintains interest on the part of the men who originate the suggestions.

#### Compete for Safety

Advantage is taken of the spirit of rivalry among the employees by presenting a number of prizes annually to the divisions having the lowest casualty rates of various classes. Bronze tablets are offered for the best records in road train and train service accidents, in switching train and train service accidents, in industrial accidents other than those occurring in the mechanical department and in mechanical department accidents. A silver cup is awarded to the division losing the least number of days per thousand man-hours. The bronze tablets are awarded on a frequency basis and the silver cup is awarded on a severity basis. Permanent disabilities in the latter competition are rated according to a weighting table, while other disabilities are rated according to the actual number of working days lost. Accidents to passengers and other outsiders while in the custody of the railroad are also taken into account in awarding the silver cup.

As another means of making the practice of safety a definite rather than an abstract achievement a book of rules for the prevention of accident and injuries was issued by the executive safety committee in 1924. Within 46 pages it lists general rules for all employees and specific rules applying to foremen in the various classes of service and to trainmen and enginemen, station employees, maintenance of way employees, employees handling materials, linemen and signalmen and mechanical department employees.

The general shops of the Great Western are located at the hub of the railroad at Oelwein, Iowa, with lines radiating from that point to Chicago, St. Paul, Minneapolis, Minn., Omaha, Neb., and Kansas City, Mo. These shops regularly employ about 1,300 men and in 1927 they had a casualty rate of 0.37 per 1,000,000

man-hours. The system casualty rate was 0.88, the lowest of any railroad in the United States. This casualty rate was reduced from 4.36 per 1,000,000 man-hours in 1925.

In the shops the tendency for the percentage of men injured to the total number employed to be greater than among other workers is offset by the better opportunity the foreman has of passing upon almost every individual movement the worker makes as a safe or unsafe practice. Here, as in other departments, the foreman is held directly responsible for accidents to the men under him. Instructions to mechanical department foremen in the safety rule book state: "Accidents resulting in injury are usually attributable to improper methods, which can be corrected, and the number of accidents reduced by proper supervision on the part of the foreman. Foremen must show a sincere desire to prevent injury. Their attitude toward this work will be reflected in actions of the men under their direct supervision."

#### Safety Idea Kept Alive by Signs

Abundant use is made of signs. At the main shop entrance at the foot bridge over the yard and station tracks, a board has been placed which carries this inscription:

"The prevention of accidents and injury by all possible means is a personal duty which everyone owes not to himself alone but also to his fellow workmen." The admonition "Be Careful—Safety Always" is painted on a sign suspended over-head at at least one point in each department. At a number of central points large boards are located which show by means of interchangeable figures the total number of reportable injuries since January 1 and the total number of days since the last injury. When a particular section of any department becomes so disorderly as to promote accidents it is designated with a sign which announces that "This is the dirtiest place in the shop." The dirtiest department for each day is also designated on the general bulletin boards.

All men working with cutting tools or who are in the path of flying particles are required to wear goggles. Each foreman carries an extra pair to set an example for the men under him and to provide a pair of goggles in case any are broken. Round glass shields have been substituted for rectangular shields over emery wheels as affording better visibility and affecting a reduction in the liability of injuries to fingers and hands.

Emery wheel axle ends have been fitted with rounded nuts instead of the usual hexagonal nut which is apt to entangle clothing. All ladders used in the shops are fitted with rubber ends to prevent slippage on concrete or metal floors and with steel spurs for use on brick or wood floors. The customary guards and shields are used to protect belts, gears and other moving parts. All such devices are painted red. An example of the extreme care which is taken to protect shopmen from injury by moving parts is found in the treatment of one class of Mikado locomotives. Shields have been mounted on the cross-head frame to prevent possible arm injury by accidental movement of the reverse gear from the cab to anyone oiling beneath the smokebox.

Directly connected with personal injury prevention at the Oelwein shops is the system of first aid and fire prevention in use. A fire prevention organization was effected early in 1923 with the appointment of a fire chief. The last fire in the shops occurred at the foundry in September, 1924. Each of four hose carts

is manned by a team of six volunteer firemen and a captain who are subject to call individually or collectively either during or outside of working hours, with emergency fire drill once a week. Fire extinguishers, pails and water barrels are located at various points about the buildings and the oil house is protected by sand barrels and buckets, a foamite fire extinguisher and a steam smother system. A first aid team is drilled by the local surgeon, so that injured persons may be skillfully handled before a surgeon arrives, and so that there may be a number who will know how to act in an emergency.

The success of the safety work at the Oelwein terminal, which has operated for more than a year without a casualty, has been increased by the complete elimination of the "drifter" or "boomer" type of yardman. No yardmen or switchmen have been hired for a number of years and vacancies in the switching crews and other forces have been filled by the promotion of clerks and helpers whose homes are in Oelwein and who entered Great Western service upon finishing high school.

Great Western system and divisional officers attribute whatever success they have attained in accident prevention to their observance of these general rules:

"Make safety work a regular part of operation and safety records an index of an officer's efficiency. Let the superintendent, who is in charge of safety work on his division, hold his staff responsible for accident prevention the same as for other branches of their work."

## Mr. Hoover and the Railways

WASHINGTON, D. C.

AS to the effect which the election of Herbert Hoover as President may tend to have on the situation of the railways and their relations with the federal government very little is apparent as yet that partakes of the nature of news. Some of his more general ideas on the subject are well known, through frequent reiteration in his various public utterances over a period of several years, including his testimony before the Interstate Commerce Commission in a general rate case, statements before Congressional committees, and many addresses. He has always expressed a keen appreciation of the importance of the railways in our economic life and of maintaining them in a reasonably prosperous condition so that they may be enabled to serve the public adequately. However, the railroad problem has not been among the issues in the campaign just closed and Mr. Hoover has not recently had occasion to discuss very specifically the kind of problems which are heard of most often around the Interstate Commerce Commission building.

Mr. Hoover has been a consistent advocate of a policy of railroad consolidation and may be expected to do something to get behind the passage of something like the Parker bill, if, as seems very probable, it is not acted upon at the remaining short session of the present Congress. He has repeatedly expressed himself, both before and during the campaign, as being strongly in favor of the early completion of a system of inland waterways, taking the position that they will afford a form of cheaper transportation for certain kinds of freight, but that their development will not have a harmful effect on the railways. He has not however, had occasion to outline his views on the numerous detail aspects of the waterway question, such as those now pending before the Interstate Commerce Commission

involving the question of the extent to which the railroads are to be required, under the Denison amendment to the waterways act, to turn over their traffic to barge lines, not only short-hauling themselves but having their divisions of through rates reduced at the same time.

Mr. Hoover was one of the foremost advocates of the policy of reducing freight rates on agricultural products and certain other "basic" commodities which resulted in the passage of the Hoch-Smith resolution, but he was in no way responsible for some of the incongruities which were squeezed into that piece of legislation in the Congressional process, nor for the details of its language which have caused so much controversy. Also his idea of reducing certain rates was always coupled with that of increasing others on traffic better able to stand it through a readjustment of the rate structure which would maintain adequate carrier revenues and his original advocacy of such a policy also contemplated a plan of consolidation of the roads into fewer and stronger systems so that the effect of a reduction on one kind of traffic might be offset by advances on other traffic handled by the same system.

One important way in which Mr. Hoover's policies may be expected to have some influence on the railway situation would be reflected in his appointments of members of the Interstate Commerce Commission. In a four-year term, a President is likely to have occasion to appoint or reappoint eight members of the commission, and in the two terms, which have become almost the usual thing, to have an opportunity to remake the entire commission. Three appointments to the commission are to be made in December, as the terms of Commissioners Aitchison and Porter expire at the end of the year and Commissioner Farrell is still serving under a recess appointment. Presumably these men will be reappointed by President Coolidge, so that in the ordinary course President Hoover would not have a chance to show the world what kind of men he thinks would make good Interstate Commerce Commissioners until December, 1929, when the terms of Commissioners Eastman and Taylor expire.

About the only way the railroads or the commission figured in the campaign was that in some states decisions of the commission not universally popular locally were cited by Democrats as evidence of Republican rascality. In Virginia and West Virginia, for instance, efforts were made to make the lake cargo coal rate case an issue by Democrats who charged that the commission had been packed for the purpose of reducing the rates paid by Pennsylvania coal operators, but the states seem to have voted for another Republican president.

\* \* \*



Car for Carrying Hot Metal—Baltimore & Ohio

Mixer ladle used to carry molten iron from Hamilton, Ohio, to the mills of the American Rolling Mill Company at Middletown, 10 miles. This car, loaded, weighs 325 tons. It is lined with fire-brick and will keep iron in a molten state 48 hours.



# Narrow Gage Railroad of Boston Is Electrified

*Annual traffic is now fifteen million passengers—Running time has been reduced one-third*

**E**LECTRIC operation has been started on the Boston, Revere Beach & Lynn Railroad, one of the few successful narrow gage railroads in this country. One train was placed in regular service on October 19, and operation should be one hundred per cent electrified some time in November. It will then be possible to reduce the running time between Boston and Lynn, Mass., by ten minutes; and, with the inauguration of express service by fifteen minutes—saving a third of the time required by the present steam schedule.

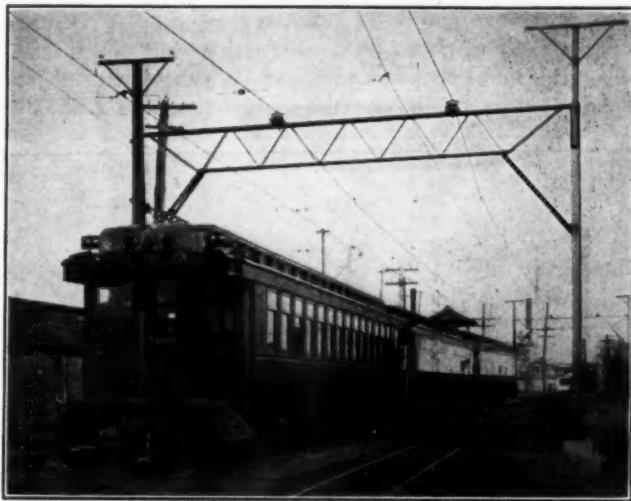
The railroad has double track from East Boston to Lynn, a distance of nine miles, with a branch line reaching the town of Winthrop. Connection from Boston to East Boston, a distance of a mile, is made by ferry. Trains are operated on a ten-minute schedule during rush hours, and on a fifteen-minute schedule at other times.

The electrification was completed in practically six months, actual construction work having been started early in April. The work was done under the direct supervision of the railroad company, with the General Electric Company supplying the electric equipment.

## Passenger Cars

Sixty of the 96 passenger cars of the railroad have been fitted out in the railroad company shops with two-motor traction equipments; and ten additional cars are to be used as trailers. All cars have been remodeled to include electric lights, electric heaters, and electro-pneumatic air brakes on all wheels. The lighting installation includes ten dome lights along each side of the cars. The electric heaters, also arranged along the sides of the cars, have enclosed heating elements.

Each motor car is equipped with two 60-horsepower, 600-volt, direct-current railway motors, specially de-



New Electric Train in Service

signed to meet the dimension requirements of the narrow gage. They are arranged for multiple control, so that the operator in the leading cab controls the power and brakes of all the cars in the train. There is an operating cab at each end of the car, making it unnecessary to reverse the trains at the terminals. These cabs occupy only a small section of one side of the car, the remainder of each end being available for passengers. The two railway motors are mounted on one truck of the car, the other truck being a trailer.

## Automatic Air Brakes Now Used

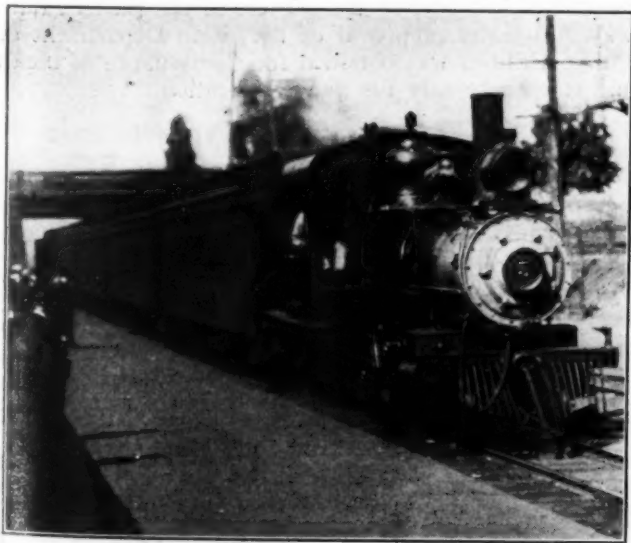
The vacuum brake system used with the steam trains has been replaced by automatic air brakes. They are of the electro-pneumatic type, and operate simultaneously on each of the eight wheels of all cars in the train. Electric headlights have been provided for the front end of each train.

Any number of cars up to eight can be coupled together in one train. Six-car trains during rush hours, and three-car trains at other times, will usually be employed. The wiring system is such that only one trolley collector will be required for short trains, and two collectors for long ones.

"Dead man control" will insure safety of operation by automatically shutting off the power and applying the brakes should the motorman release his hold on the control.

## Line Construction

Several features of the catenary line construction merit mention. Corrosion-proof steel bridges support the trolley wires. These are spaced at intervals of 300 feet except on curves, meeting the specifications of the American Electric Railway Association. Had wooden poles been used the spacing would have been reduced necessarily to 100 feet. Since atmospheric conditions



One of the Steam Trains

along the ocean shore are injurious to iron and steel, many of the fittings of the bridge structures have been made of bronze. Similarly, the supporting messenger, or upper wire, is of heavy copper instead of the customary steel. This messenger also serves as a feeder for distributing the current to the trolley wire.

#### Provisions for Signal and Telephone Wires

Provisions have been made for carrying telephone and signal wires on the overhead bridges, doing away with the line of wooden poles now paralleling the railroad.

This type of catenary construction has been used along the line except in yards and sidings, where direct suspension is used. In the case of underpasses and

in operation, and other remodeling and modernization work has also been included.

#### History of the Railroad

The Boston, Revere Beach & Lynn Railroad was planned 56 years ago, primarily to develop the land now included in East Boston and Revere, Mass. It was not until May 23, 1875, however, that actual construction was started. This was quickly followed by inauguration of regular service on July 28 of that year. Three locomotives, seven first-class cars finished in hardwood with plush upholstery and silver-plated mountings, two baggage and two open cars made up the rolling stock in the first year. Only two trains were run regularly over the single-track line, from 6 a. m. to 9 p. m., passing each other at the Chelsea beach ridge.

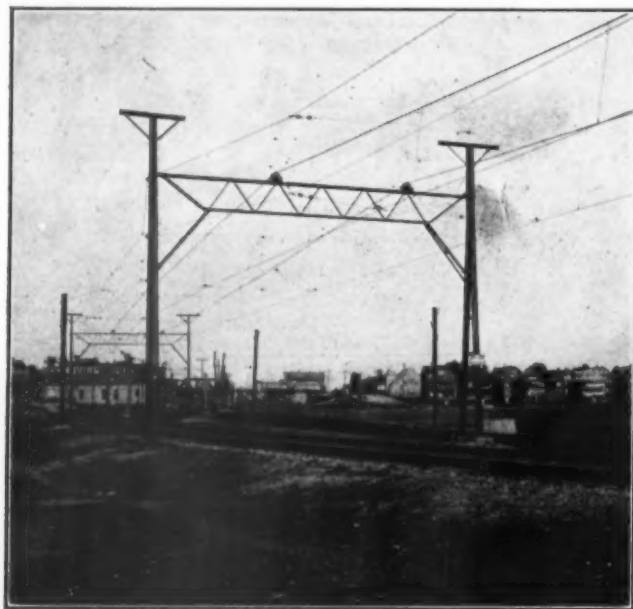
The Winthrop branch, a circuit from Orient Heights, was originally the Boston, Winthrop & Shore Railroad. It was also established to develop land properties. Started in 1877, it was leased by the narrow gauge in 1886, and merged with the latter in 1891. Following the merger new tunnels and terminals were built in East Boston, and additions made to the equipment.

Today the double-tracked railroad has more than 600 employes, four ferry-boats and 96 passenger cars, and 26 steam locomotives which are now to be discarded in favor of the electric cars. In spite of the amount of equipment, the railroad has often been taxed to capacity, especially to accommodate the Sunday crowds journeying to and from Revere Beach. Slightly more than a million passengers were carried in the first year of operation; today the number approaches fifteen millions.

Hand brakes were used until 1878, when the vacuum brake was adopted. The railroad adopted the telephone for train dispatching in 1879, and has continued to use it since then. Following the successful use of the telephone by the Boston, Revere Beach & Lynn other lines subsequently adopted it, either exclusively or in conjunction with the telegraph. Not only was the B. R. & L. the first railroad to use the telephone for train dispatching, but it was one of the first steam lines to use what is known as the Walchaert valve gear on its locomotives. It was also one of the first steam roads to be equipped entirely with automatic block signals.

Shortly after the acquisition of the railroad in November of last year by the trustees of the Eastern Railway Associates, approval of the State Department of Public Utilities was obtained for the issuance of bonds and stock necessary for its electrification.

\* \* \*



Typical Overhead Construction

bridges, where additional clearance was required by the wires, the necessary height was obtained by lowering the tracks. This was done without interfering with train schedules or vehicular traffic.

The automatic signal system formerly operated by batteries, has been changed to operate through transformers from 2300-volt alternating current supply.

#### Substations

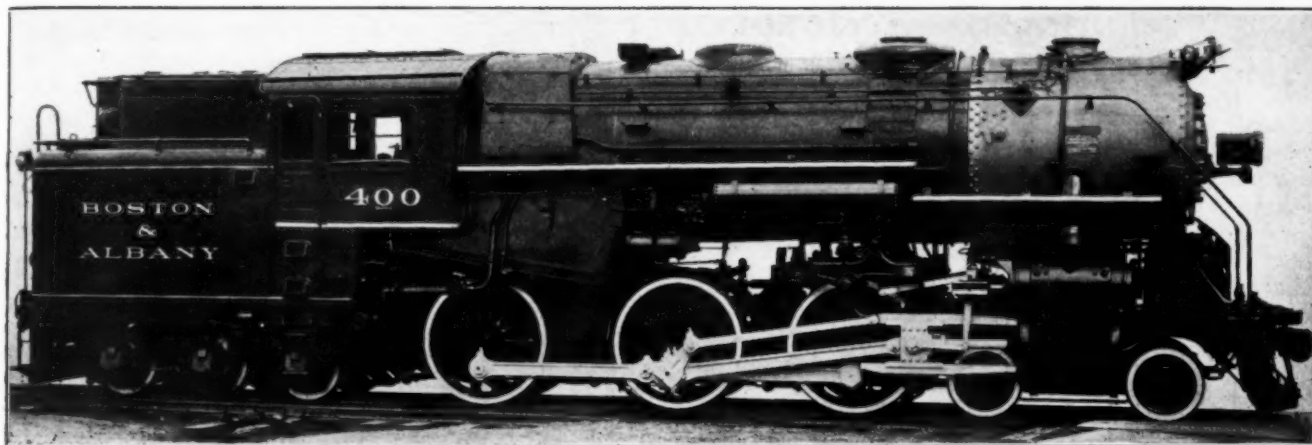
Power is received in the distribution system through two electric substations. The one at Orient Heights, Mass., fully automatic in operation, contains two 1000-kilowatt synchronous converters for changing the 13,800-volt alternating current as received by the Edison Electric Illuminating Company of Boston to the 600-volt direct current as used by the motors. The second substation, located at Lynn and receiving power from the Lynn Gas and Electric Company, contains one manually-operated synchronous converter substation, mounted on a car so that it can be moved to any point along the line where it may be needed. The substations, operated in parallel, provide power over the entire line of the railroad. It is estimated that the power demand of the completely electrified line will amount to at least 9,300,000 kilowatt-hours per year.

The use of electricity has not been confined to the rolling equipment, but has been extended to include improvements in the terminal and station facilities as well. Electric turnstiles on the "pay as you enter" plan are



An Express Train on the German State Railways





A 4-6-6 Tank Locomotive Built for the Boston & Albany by the American Locomotive Company

## Suburban Locomotives for the Boston & Albany

*Double-end type makes possible quick turn-around service  
—Develop a tractive force of 41,600 lb.*

**M**ANY of the Boston & Albany suburban trains out of Boston operate over the Highland branch or over the main line to Brookline Junction where the branch line connects with the main line. An average of 14 stops in approximately 35 min. are made on the Highland branch, which is 12.25 miles long, while on the main line suburban district, which is 10.9 miles long, an average of ten stops is made in approximately 32 min. There is no turntable near the terminal points to provide quick turn-around service.

The Boston & Albany has recently placed in service five double-end locomotives built by the American Locomotive Company which, with the 18 locomotives of this type already in service, makes a total of 23 double-end locomotives hauling suburban trains. When one of these locomotives brings a train into the terminal, a switching locomotive pulls out the empty train, after which the double-end locomotive moves over to another track and takes out a train without the necessity of turntable service.

The new locomotives will haul ten steel 100-passenger coaches, while the older type will haul only eight steel passenger coaches. The new locomotives develop a tractive force of 41,600 lb. as compared with 32,550 lb. tractive force for the older design. The new locomotives are equipped with four-wheel engine trucks, while the older engines have two-wheel trucks.

The diameter of the drivers of the new locomotives is 63 in. The diameter of the cylinders is  $23\frac{1}{2}$  in. and the stroke, 26 in., and the boiler operates at a working pressure of 215 lb. The total weight of the engine is 352,000 lb., of which 180,000 lb. is carried on the drivers, 62,000 lb. on the engine truck and 110,000 lb. on the tank truck, which carries the fuel and water. The factor of adhesion is 4.32.

The valves are actuated by the Baker valve gear. The cylinder lubrication is supplied by a Nathan six-feed mechanical-type lubricator.

The boiler is of straight top construction and is noteworthy for its liberal firebox proportions. The grate area is 60.8 sq. ft., providing one square foot for each 58.5 sq. ft. of heating surface. The ratio of firebox heating surface to evaporative heating surface, in per cent, is 6.85, which is relatively high for a firebox without a combustion chamber. The boiler has an inside diameter at the first ring of  $82\frac{7}{16}$  in. and an inside diameter at the second ring of  $84\frac{1}{8}$  in. The distance between flue sheets is 13 ft. 6 in. There are 234 tubes 2 in. in diameter, spaced  $\frac{3}{4}$  in., which provide a heating surface of 1,643 sq. ft. The flue heating surface is 905 sq. ft., making a total heating surface of 2,548 sq. ft. for the tubes and flues. The arch tubes have a heating surface of 24 ft. The firebox is  $102\frac{1}{8}$  in. long by  $85\frac{3}{4}$  in. wide, providing a heating surface of 189 sq. ft. The total evaporative heating surface is 2,761 sq. ft. and the superheating surface is 788 sq. ft. The locomotives are equipped with the Type A superheater.

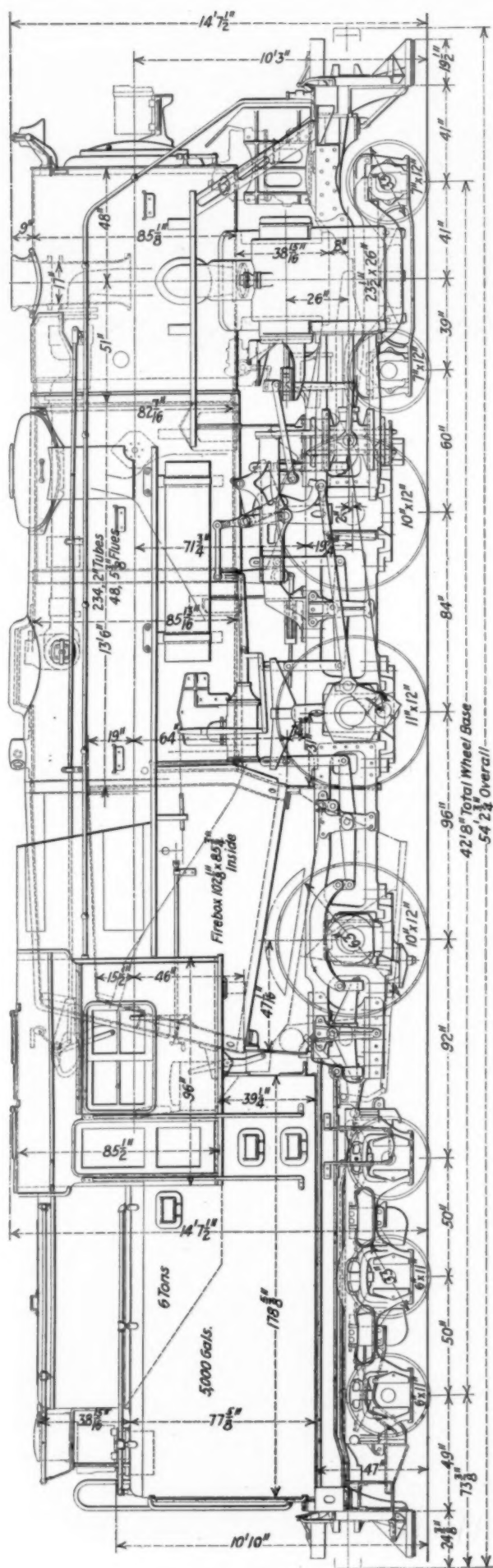
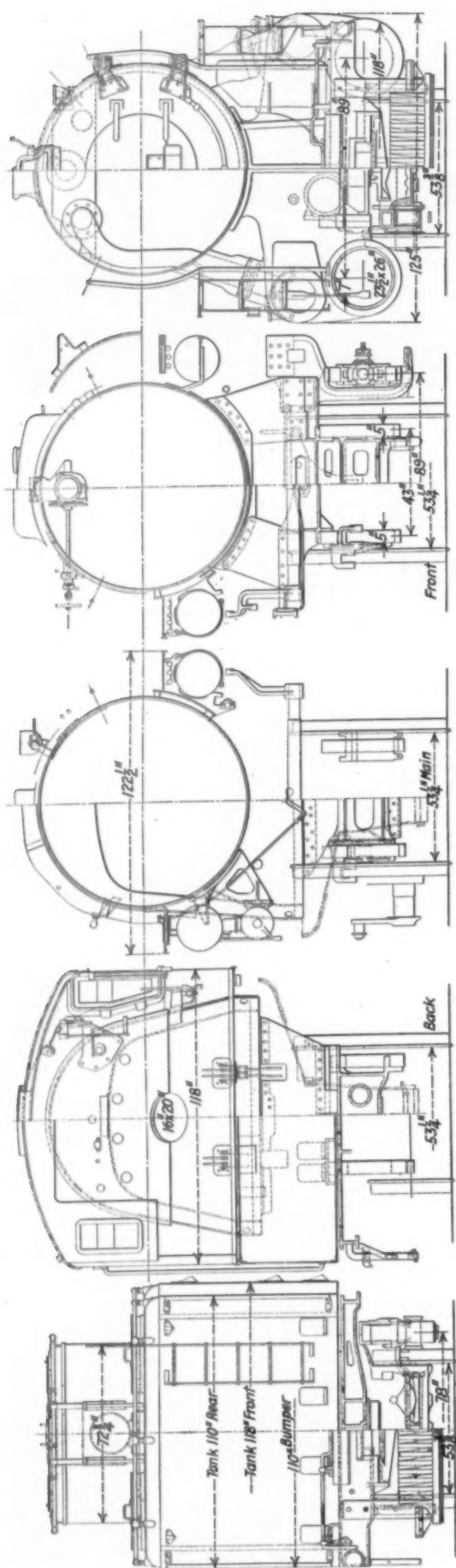
### The Smoke Box

The smoke box has an outside diameter of  $58\frac{1}{8}$  in. It is provided with a single exhaust pipe with a maximum tip diameter of  $6\frac{3}{8}$  in. A recess is provided in the smokebox to receive the American multiple front-end throttle.

### Mechanical Details

The back ends of the main rods and the main pin connection of the side rods are provided with floating bushings. The engine and trailing trucks are the Commonwealth constant resistance type. The trailing truck rockers are proportioned so that the resistance at the rail equals that of the front truck. The locomotives are also equipped with the Commonwealth cast steel ash pans and bumper beams.

The tank frame is cast integral with the rear section



Elevation and Cross Sections of the Boston & Albany Suburban Locomotive



of the main frame to which the front frame sections are bolted. The cylinders are also of cast steel.

The sand traps and pipes are located beneath the jacket. Sliding cover plates set in the jacket provide ready access to the traps. The steam turret valves are completely covered by a hinge-type casing, located directly in front of the cab.

#### Train Control Equipment

The locomotives are equipped with the General Railway Signal Company's intermittent type automatic train control. As the locomotives are operated in either direction, an impulse receiver is located on each side of

#### Talk of Dimensions, Weights and Proportions of the Boston & Albany Suburban Locomotives

Railroad .....	Boston & Albany
Builder .....	American Locomotive Co.
Type of locomotive .....	4-6-6 tank
Service .....	Suburban
Cylinders, diameter and stroke .....	23 3/4 in. by 26 in.
Valve gear, type .....	Baker
Valves, piston type, size .....	14 in.
Maximum travel .....	9 in.
Outside lap .....	1 5/16 in.
Exhaust clearance .....	3/16 in.
Lead in full gear .....	5/16 in.
Weights in working order:	
On drivers .....	180,000 lb.
On front truck .....	62,000 lb.
On trailing truck .....	110,000 lb.
Total engine .....	352,000 lb.
Wheel bases:	
Driving .....	15 ft.
Total engine .....	42 ft. 8 in.
Wheels, diameter outside tires:	
Driving .....	63 in.
Front truck .....	33 in.
Trailing truck .....	33 in.
Journals, diameter and length:	
Driving, main .....	11 in. by 12 in.
Driving, others .....	10 in. by 12 in.
Front truck .....	7 in. by 12 in.
Trailing truck .....	6 in. by 11 in.
Boiler:	
Type .....	Straight top
Steam pressure .....	215 lb.
Fuel, kind .....	Soft coal
Diameter, first ring, inside .....	82 7/16 in.
Firebox, length and width .....	102 1/2 in. by 85 3/4 in.
Tubes, number and diameter .....	234—2 in.
Flues, number and diameter .....	48—5 3/4 in.
Length over tube sheets .....	13 ft. 6 in.
Grate area .....	60.8 sq. ft.
Heating surfaces:	
Firebox .....	189 sq. ft.
Arch tubes .....	24 sq. ft.
Tubes and flues .....	2,548 sq. ft.
Total evaporative .....	2,761 sq. ft.
Superheating .....	788 sq. ft.
Comb. evaporative and superheating .....	3,549 sq. ft.
Tender:	
Water capacity .....	5,000 gal.
Fuel capacity .....	6 tons
Rated tractive force .....	41,600 lb.
Weight on drivers ÷ tractive force .....	4.32
Boiler proportions:	
Tractive force ÷ comb. heat. surface .....	11.72
Tractive force × dia. drivers ÷ comb. heat. surface .....	738
Comb. heat. surface ÷ grate area .....	58.5
Firebox heat. surface ÷ grate area .....	3.2
Firebox heat. surface, per cent of evap. heat. surface .....	6.85
Superheat. surface, per cent of evap. heat. surface .....	28.5

the cab. A reversing mechanism is located on the middle axle of the six-wheel tank truck. This device automatically changes over the flow of current with a change in the direction of motion.

The boiler and tender are carried on a continuous frame, which gives a rigid wheel base 42 ft. 8 in. long. This construction results in a long overhang extending from the rear pair of drivers to the rear of the tender. As a result of this overhang, it was necessary to taper the tender from the cab to the rear in order to obtain necessary clearances when rounding a curve.

The boiler jacket, cab and tender are finished with lacquer.

SEED POTATOES shipped from Prince Edward Island in November to points in the United States totaled 190,000 bushels. Most of these potatoes went out in three vessels destined to New York, Norfolk, and other southern ports.

## Accident Investigations, Second Quarter

THE Interstate Commerce Commission has issued its Bulletin No. 36 giving a summary of the reports of the Bureau of Safety on train accidents investigated in the months of April, May and June, 1928. The investigations in this quarter covered nine collisions and four derailments; and the bulletin includes also the report on a derailment at Balloch, N. H., in February, which report was abstracted in the *Railway Age* of September 22, page 554.

The report numbered 1415, on the collision at Danville, Ky., April 10, was given in abstract in the *Railway Age* of June 16, page 1393. The other reports in this bulletin are abstracted herewith.

#### Train Accidents Investigated in April, May and June, 1928

1396 Boston & Maine .....	Balloch, N. H., Feb. 13.....D
1414 Reading .....	Sunbury, Pa., Apr. 9.....C
1415 Cincinnati, New Orleans & Tex. Pac. ....	Danville, Ky., Apr. 10.....C
1416 Baltimore & Ohio .....	Bard, W. Va., May 6.....C
1417 Wilkes-Barre & Hazleton .....	St. Johns, Pa., May 18.....G
1418 St. Louis-San Francisco .....	Hardy, Ark., May 15.....C
1419 Pennsylvania .....	Johnstown, Pa., May 20.....D
1420 Chicago, Indianapolis & Louisville .....	St. Johns, Ind., May 25.....D
1421 Pennsylvania .....	Barberton, Ohio, May 28.....C
1422 Illinois Traction System .....	Delong Siding, Ill., May 31.....C
1423 Lehigh Valley .....	Mount Carmel, Pa., June 2.....D
1424 Atlantic Coast Line .....	Whaley, Va., June 6.....D
1425 Missouri Pacific .....	Pine Bluff, Ark., June 9.....C
1426 New York, Chicago & St. Louis .....	Swanville, Pa., June 13.....C

*Reading, Sunbury, Pa., April 9, 8:55 a. m.*—Northbound freight extra 1703, moving at 30 miles an hour or faster, collided with southbound passenger train No. 6, which had overrun the appointed meeting place. The engineman of the passenger train was killed and 21 persons were injured. A meeting order had been delivered to the engineman of the passenger train but not to the conductor. The engineman, who was fatally injured, stated, before his death, that he had misread the order; no definite reason can be given for his failure to read it correctly. This report fills 11 pages, four of which are taken up with the conclusions of the inspector, who found a variety of bad or questionable practices. The line has a manual block system but this was practically suspended by the issuance of a meeting order allowing these trains to meet within the block, which is about seven miles long. Orders for southbound trains received in the daytime are usually delivered at Sunbury station, but in this case, the order was sent to the towerman at the Pennsylvania crossing, 700 ft. south. The towerman was on the ground with a copy of the order ready for the conductor but no one was on the car steps to receive it, the engineman having failed to follow the customary practice of sounding four blasts of the whistle as a notice to the conductor to expect an order. The chief dispatcher said that the towerman should have stopped the train before delivering the order. According to rule, the operator should have delivered the order to the conductor in person. The practice of suspending the block system to allow meeting points to be made between stations was ordered by the chief train dispatcher in 1922. The report says that if Form 31 (calling for signatures) had been used for the train order "it is more than probable that the accident would not have occurred." Other things criticised were the failure of the towerman to deliver a clearance card with the order, as required by rule; his failure to display a red flag in addition to the block signal (there is no separate train-order signal at the tower, although there is one at the station). The rule requires conductors of freight trains to ride on the engine so as to be able

promptly to receive orders; and if he cannot be there, he is allowed to delegate the duty to the front brakeman. The inspector deems it important that information about orders should be regularly given to persons at the rear end of the train.

*Baltimore & Ohio, Bard, W. Va., May 6, 3:10 a. m.*—Eastbound freight extra 4879 which had been delayed because of difficulty in the operation of the locomotive stoker and was moving at moderate speed, was run into at the rear by a following extra, No. 4060, and the conductor of the leading train was killed. The engineman of No. 4060 is held responsible for the collision, he having moved at full speed for a considerable distance while under permissive signal in a dense fog; and the men on the leading train failed to give proper protection. The manual block section within which this collision occurred, is ten miles long from Porter's Falls to Brooklyn Junction and it appears that, because of yard work going on at Brooklyn Junction, substantially all eastbound freight trains are run through this block on permissive signal indication. In the month of April, all of the 197 eastbound freight trains were moved in this way. The report says that "under such circumstances, it is obvious that virtually no protection is afforded by the block system".

*Wilkes-Barre & Hazleton, St. Johns, Pa., May 18.*—Collision between northbound passenger train No. 15 and southbound passenger train No. 12, each consisting of a single electric motor (steel), both trains running at considerable speed. The front vestibule of each car was wrecked and much other damage was done. The wreckage at once caught fire and the inflammable parts were destroyed. The motorman of No. 15 was killed and 28 passengers and three employees were injured. Train No. 15 had run past its timetable meeting point. The motorman was killed and the conductor "had entirely overlooked the meet with train No. 12." His only excuse was that he had been in conversation with the motorman, approaching the meeting point, concerning a package which the latter had in his possession to be delivered at a certain point. The fire is believed to have been started by a short circuit in the controller cable which connects the third rail shoes with the overhead switches.

*St. Louis-San Francisco, Hardy, Ark., May 15.*—Southbound passenger train No. 103, moving at about 25 miles an hour, ran past the switch at which it should have entered a siding and collided with northbound passenger train No. 104 which had stopped to wait for No. 103. The engineman of No. 104 saw the excessive speed of the other train and had succeeded in moving his train backward a short distance. Fourteen passengers, five persons carried under contract and one employee were injured. Engineman Phillips, of No. 103, held responsible for the collision, said that he had misunderstood a message telling him to enter the side track and also was under the impression that the entrance was to be made at a cross-over, one-half mile farther south. This message, accompanying the meeting order, had confused him, he said. It appears that northbound trains are superior by direction but that it is the practice regularly to issue orders covering all meetings of first-class trains, this in order to increase safety and reduce delay. It has been the custom in this order to allow train 103 to hold the main track at Hardy because usually, it has more work to do at that station than has No. 104. In this case, however, this reversal of superiority was not ordered; and for this reason the dispatcher sent the telegram (supplementary to the train order) instructing No. 103 to head in at the north end of the passing track. This

the engineman should have done, of course, without instruction; and the dispatcher observed at the trial that the omission to reverse rights should not have misled the engineman, for he was not the regular runner on this train. He had been an engineman for six years but had not had much experience in handling passenger trains. Phillips had sounded the meeting point whistle. The rule requires that if the train is to take siding, the meeting point whistle is to be repeated one-half mile from the switch. The engineman says that he did not sound the second one of these two signals because he saw the opposing train, but the other members of the crew say that the second signal was sounded. The question whether the conductor shares responsibility for the occurrence of the collision depends on whether the second signal was sounded, and the inspector does not attempt to settle this direct conflict of evidence. The fireman of No. 103 also said that two meeting point whistles had been sounded; but because of the doubt as to the evidence on this point, the inspector is unable to decide what responsibility attaches to the fireman.

*Pennsylvania, Johnstown, Pa., May 20, 6:31 a. m.*—Eastbound freight train, extra 6874, consisting of 82 cars, caboose and locomotive, was derailed while moving at about 20 miles an hour and the wreckage, fouling westbound track No. 3 caused the derailment of passenger train No. 61 moving at about 40 miles an hour. The passenger engine was overturned and the fireman was killed; 23 passengers and one employee were injured. The derailment of the freight is believed to have been due to the defective condition of a truck center plate of P. R. R. box car 571,046. This car, the thirty-fifth in the train, made marks on the rails indicating that the truck would not properly follow the curvature of the track. The truck center plate had abrasions on its rim indicating that at some time the male or body center plate had ridden on the rim.

*Chicago, Indianapolis & Louisville, St. John, Ind., May 25, 5:53 a. m.*—Northbound passenger train No. 36, moving at about 45 miles an hour was derailed by striking an automobile trailer on a crossing, and the locomotive and first two cars were overturned. The engineman and fireman were killed. There was a dense fog at the time. The automobile trailer was a heavy car about 16 ft. long and 14 ft. wide and its body, underslung, cleared the roadway by only eight inches. Crossing the railroad, this body scraped the rail because of the steep descent in the highway immediately beyond the track, and became stalled. An angle iron became caught in the west rail and the train came on before the vehicle could be released.

*Pennsylvania, Barberton, Ohio, May 28.—11:09 p. m.*—Collision on a line used jointly by the Pennsylvania and the Baltimore & Ohio. Northbound Baltimore & Ohio freight train extra 4241-4173, two locomotives hauling 56 cars of iron ore, moving at low speed, ran past the block signal (manual) at VD block station and collided with a Pennsylvania freight moving slowly southward on the northbound track, pushing the locomotive of the southbound train back about 135 ft. and wrecking six cars of that train. The wreckage fouled the southbound track and damaged a dozen cars of a southbound Baltimore & Ohio freight train moving slowly on that track. Two trespassers were killed and one employee and two trespassers were injured. The leading engineman of the northbound freight is held at fault for not approaching the block signal under proper control. There was a dense fog at the time and this engineman says that he became temporarily confused as to his location. There is a train-order



signal at VD which displayed a red light. The engineman of the second engine said that, notwithstanding the fog, he could at all times determine the position of his train within about 300 ft. and he is censured for not sounding the whistle to warn the leading engineman of his carelessness. The train order authorizing the southbound freight to use the northbound track was sent by telephone to the conductor and was written out by him, but no copy was given to the engineman; the conductor advised him by word of mouth. This order was annulled after the southbound train arrived at VD, and the men on the northbound train had no copy of it. The report criticises neglect to heed the rule that meeting orders must be sent first to the superior train and must be delivered if possible, at some point short of the meeting station. The report holds that if the northbound train had had a copy of this order, it is probable that the collision would have been avoided.

**Illinois Traction System, Delong Siding, Ill., May 31, 5:01 p.m.**—Eastbound limited passenger train No. 74, consisting of a single electric motor, No. 271, moving at from 25 to 40 miles an hour, ran past its regular meeting point with westbound limited passenger train No. 77 and collided with the latter, which was running at about 15 to 18 miles an hour. The report states that both of these cars were equipped with an anti-telescoping device but the underframe of car 271 over rode the floor of the other car No. 259, for a distance of about 25 ft. wrecking the car, although none of the wheels of either car went off the track. The motorman of No. 74 was killed as were six passengers; and 15 passengers and one employee were injured.

The cause is given as the failure of train No. 74 to stop at its timetable meeting point with train No. 77. Neither train had right over the other, although westbound limited trains are required to take siding for eastbound limited trains. The rule provides also that if the train which is to hold the main track arrives first, the conductor must set the switch for the other train to enter the siding. It appears, however, that this rule was habitually neglected and it was the custom for trains first reaching a meeting point to proceed beyond the switch and back in. The conductor of No. 74 stated that he did not realize that his train was approaching the switch too rapidly. Testimony of passengers indicated that the motorman of No. 74 was physically or mentally incapacitated and did not realize that he was approaching the point where he should meet the westbound train, though that train was in plain sight. The inspector holds that the habit of mind engendered by the practice of running by and backing in had undoubtedly delayed the conductor in taking active measures to bring the train to a stop; a little closer attention to details would have enabled him to apply the brakes sooner than he did.

**Lehigh Valley, Mount Carmel, Pa., June 2, 10:40 p. m.**—Westbound passenger train No. 209, moving at 20 miles an hour or faster, on a descending grade of 1.37 per cent over a curve of 13 deg., was derailed, and the engine and first car fell down a bank. The engineman and fireman were killed and 12 other persons were injured. The rule requires speed over this curve to be limited to 10 miles an hour and the inspector concludes that the trouble was excessive speed. The trainmen make no estimate above 20 miles an hour but the inspector believes from the evidence of the wreck, that the rate was much higher. The engineman had been a runner for 15 years, with a good record, but the report notes that the conductor having

inquired after the engineman's health at the beginning of this trip, prior to which the engineman had been off duty several days on account of sickness, says that the reply was that his "head did not feel right."

**Atlantic Coast Line, Whaley, Va., June 6, 7:05 p. m.**—Southbound passenger train No. 41, moving at about 50 miles an hour, ran over a misplaced switch and was derailed on a side track when the locomotive struck the Hayes derail; the locomotive was overturned and wrecked, and the engineman and fireman were killed. Five passengers and three employees were injured. The inspector believes that the switch had been left misplaced by a track repair gang which had been at work at or near that place, though an examination of the foreman and three employees as to their movements while unloading rail and moving a motor-car and a push-car from the main track to the siding, developed only denials and conflicting statements. The engineman's failure to see the red indication of the switch is not explained, but the train was moving toward the setting sun, and the engineman's attention was drawn to a highway crossing, a short distance beyond the switch, and it is believed that these circumstances may possibly afford some explanation. The section foreman was a man of 22 years' experience in that position, while two of his men were also experienced in track work.

**Missouri Pacific, Pine Bluff, Ark., June 9, 1:13 a. m.**—A northbound freight train entering the yard, which had left the rear portion of its train on a long siding south of the yard and was proceeding with the forward part slowly northward, had been stopped in the yard track before having fully cleared the main line; and while standing was run into at the rear by northbound passenger train No. 102, which was traveling at full speed. The locomotive was overturned and much other damage done; and the fireman was killed. Ten employees, four mail clerks and 43 passengers were injured. The flagman of the freight had not properly flagged the passenger train. He was on the rear portion of his train, in the long siding, and had been told by the conductor to look out for train 102. His only explanation for not flagging the train as it approached was that he had looked ahead and saw green lights at all of the switches in the yard tracks and concluded that the whole of his own train had entirely cleared the main track.

**New York, Chicago & St. Louis, Swanville, Pa., June 13, 4:32 p. m.**—Eastbound second class freight train No. 58, second section, (94 cars) ran past Fairview Pit where it should have waited for westbound third class freight No. 51 (89 cars) and collided with the westbound train, both trains being in motion at from 15 to 25 miles an hour. Four employees were injured. The order requiring the eastbound train to wait at Fairview Pit was on Form 19 which requires the signatures of the engineman and the conductor (Form 17 being used where signatures are not required) but the operator at Thornton Junction delivered the order to second No. 58 without taking signatures; and the engineman and fireman both misread it. The latter part of the order made a meet for the Eastbound train at Swanville (east of Fairview Pit). These men admit their error, and also admit that there was nothing to distract their minds except possibly this meet clause. The order had been in their hands only about 20 minutes. Both admitted that the order was legible, but neither of them read it to the other. The fireman said that the action of the dispatcher in ordering a meet at Swanville, when it would have been possible to go farther, "was not to his liking". As the trains ap-

proached each other, they were approaching a high viaduct 866 ft. long. The conductor, seeing that the train had wrongfully passed Fairview Pit, first thought that perhaps the engineman had received additional orders at Fairview Pit and he hesitated to apply the brakes; and a short time afterwards he hesitated again because there was possibly a defective air brake in the train which might cause an emergency application; and still further, even after he saw train No. 51, he refrained from applying the brakes for fear that in doing so, he would cause the engines to meet on the viaduct. The operator at Thornton Junction held up the order where Engineman Hites could see it and Hites jumped off, took the order and then boarded the fifth car behind the locomotive, without bringing the train to a stop. The operator said that he read the order to the engineman but this the engineman denies. The operator delivered the conductor's copy of the order by hoop to the flagman on the caboose.

The report says that between Brocton and Thornton Junction, 55 miles, this single-track line operated without any block system except for passenger train movements, is traversed by six westbound and eight eastbound freight trains regularly besides extras; and that the operation of the block signal system should be extended to cover train movements of all classes.

## Summary of Pennsylvania Electrification Plans

THE Pennsylvania's New York-Washington line is now electrified from the Sunnyside yards at Long Island City, Long Island, to Manhattan Transfer, N. J., and from Philadelphia, Pa., to Wilmington, Del.; the latter section has just been completed. According to General W. W. Atterbury, president of the Pennsylvania, the next step will be electrification of the road between Philadelphia, Pa., and Trenton, N. J., which will be completed about 1930. The Newark, N. J., to New Brunswick section will then be completed in a year or a year and a half, after which the Trenton to New Brunswick section will be completed. The plan also includes the line from Philadelphia to Columbia and Atglen, Pa.

Electrification will eliminate Manhattan Transfer in New Jersey where all trains in or out of the Pennsylvania station stop to change locomotives.

Arrangements have been made by the railroad to purchase quantities of power from the Public Service Corporation of New Jersey and the Philadelphia Electric Company. The following table includes the principal facts concerning the Pennsylvania electrification between New York and Wilmington, Del., and from Philadelphia to Columbia and Atglen, Pa.

Miles of railroad to be electrified .....	325
Miles of track to be electrified .....	1,300
Electric locomotives required for new electrified operation:	
Passenger .....	165
Freight .....	290
Total new electric locomotives required .....	365
Electric locomotives now in operation .....	84
Number of passenger trains:	
To be operated by electric locomotives .....	318
To be operated as multiple-unit trains .....	218
Estimated cost to complete program .....	\$100,000,000
Estimated time to complete program .....	6 to 7 years
Saving in number of freight trains operated .....	Approximately 50 per cent
Size of freight trains to be operated .....	125 cars
Speed of freight trains under electrified operation .....	25 miles per hour
Miles of railroad already electrified (includes 140 mi. L. I. R. R.) .....	333
Miles of track already electrified (includes 418 mi. L. I. R. R.) .....	960
Total P. R. R. line mileage which will be operated electrically on completion of new program .....	658
Total P. R. R. track mileage to be operated on completion of new program .....	2,260

## Looking Backward

### Fifty Years Ago

Track has now been laid on the Hastings and Dakota division of the Chicago, Milwaukee & St. Paul to Montevideo, Minn., 133 miles west of Minneapolis.—*Railroad Gazette*, November 8, 1878.

The general superintendent of the Indianapolis, Bloomington & Western [now part of the Cleveland, Cincinnati, Chicago & St. Louis] has completed a seven-days' tour of about 300 miles over his lines on a hand car. He was accompanied by the master car builder for the whole trip and by the roadmasters over their respective divisions.—*Railway Age*, November 7, 1878.

The report of the Central Pacific [now part of the Union Pacific] for 1877 shows that the average passenger-train load in that year was 93, while the average freight-train load was 90 tons. The average rate per passenger-mile was 3.02 cents. The traffic each way daily over the entire mileage operated amounted to 240 tons to freight and 140 passengers.—*Railroad Gazette*, November 8, 1878.

### Twenty-Five Years Ago

The Louisiana Supreme Court has made permanent an injunction restraining the Railroad Commission of that state from exercising any supervision over the Gulf & Ship Island [now part of the Illinois Central] or its passenger and freight rates. Its charter, granted in 1882, provided for such immunity as an encouragement to the construction of the railroad.—*Railway Age*, November 13, 1903.

The Kentucky Railroad Commission, acting under a state law, passed in 1900 and upheld in Federal courts, conferring rate-making power on that body, has undertaken the task of remaking the system of freight rates in effect in Kentucky. In addition to its power over transportation within the state, the commission is instructed by the law to investigate interstate rates as to their justice to citizens of Kentucky.—*Railway Age*, November 13, 1903.

### Ten Years Ago

Daniel Willard, president of the Baltimore & Ohio, has been appointed colonel of engineers in the United States Army, and plans to sail at once for France to report to Brigadier General Atterbury. Mr. Willard's selection was made by General Pershing at the request of the French Government, which desires the services of an experienced American railroad operating officer as an assistant to the French Transport Department.—*Railway Age*, November 8, 1918.

Arrangements have been made by the Railroad Administration for the operation of 182 miles of the parallel lines of the Southern Pacific and the Western Pacific in Nevada as double track. The saving in time to be accomplished is estimated at 2 hr. for each freight train and 30 min. for each passenger train. Physical changes include the construction of 11 crossover connections, at a total cost of approximately \$118,000.—*Railway Age*, November 8, 1918.

One of the most serious problems now confronting the Railroad Administration in the maintenance of roadway is that of securing an adequate supply of ties. Hale Holden, regional director of the Central Western region, has submitted a report to the Director General showing a shortage of 6,200,000 ties or 120 ties per mile of line on the roads in that region on September 1. This indicates a deficiency of about 40 per cent and is typical of conditions over the country.—*Railway Age*, November 8, 1918.



# Communications and Books

## Railroad Costs

PUEBLO, COLO.

TO THE EDITOR:

I have read with interest the several articles on applying cost accounting principle to railway accounting and statistical comparisons.

Cost accounting principles can and should be applied to operating statistical comparisons, which will give an actual record of performance. The present method of comparing previous month and same month last year does not give a fair comparison. If a division handled 165 million gross ton-miles last year and this year only 125 million gross ton-miles the years are not comparable. Should the business handled be near the same figure it does not necessarily follow that a comparison will enable one to determine whether performance this year has been all that it should have been. Both year's business may have been poorly handled and because this year showed an improvement does not indicate proper performance.

Standard Costs should be determined for various months or seasons on a unit basis and actual performance compared with these costs. Such a record would indicate whether division officers were coming up to the standard set them—a standard which has been based on a careful analysis of performance for several years past and from a careful study and analysis of present operating conditions.

CHAS. A. GERRARD.

## Automobiles vs. Railways

NEWTON CENTER, MASS.

TO THE EDITOR:

The other day a man announced to a waiting world that he had made a thousand-mile round trip in an automobile for \$12. On the surface, this looks astonishing; but upon closer examination, it does not seem so good. First of all, it omits such important items as the cost of food, hotel accommodations and half a dozen other incidentals. In fact, it probably covers nothing more than the "gas" used on the trip.

Secondly, it turns out that this trip occupied a number of days; as a result of which it cannot take many honors for speed. Several years ago a party of three motored from Boston to the Pacific coast and return. Their verdict was "Never again!" The impossibility of reaching suitable hotels after a day's run was only one of the many hardships that were encountered. The difficulty of obtaining food and water, enroute, was another. Mud, dust and dangerous mountain roads swelled the total of woes. And the time occupied was nine weeks.

So far as I can see, the railroads have nothing to fear from such competition. People who value their lives and their time will continue to ride in Pullmans, as they have heretofore. In fact, I was informed that most of the long distance tourists are either "tin can lizzies" or out-and-out undesirables. Certainly the local inhabitants did not view any of them with marked favor.

Arthur Brisbane thinks that the auto is a boon to the poor man and an educator of the first rank. Perhaps. All the same, there are a great many tradesmen who are "up to their ears" in bad debts, because customers make the payments on their autos and allow the butcher, the baker, etc., to "hold the bag." This situation is then reflected all over the community.

I am not opposed to the auto. It is a good thing in its place. But I feel that transportation, in its largest sense, is a function of the railroads, and that the community should do nothing to subsidize competition in that field. In taking this attitude, I am not seeking to revise a moribund industry, but to protect a going concern, which is incomparably the best of any yet devised. The mere circumstance that uninformed persons are not aware of this fact is a matter of little consequence.

As time goes on, it may be possible to lift some of the burdens of taxation from the railroads and thereby enable them to get into a better stride. A scientific revision of the rate structure would help also.

But, regardless of what any moon-struck theorist may imagine, the auto will not solve the transportation problem. As it is, the congestion in cities is such that a walker can make more rapid progress than a motor driver. By intelligent use of the railroads, this man can see more customers—wherever they are—than by trying to dodge about in an auto. Of course, no man in his senses believes for an instant that the long jumps can be made by motor. Certainly I would be sorry for any man whose time was worth so little.

It all simmers down to a matter of sound sense. Saying that you can drive an auto a thousand miles for \$12 is utterly misleading, because it takes no account of time—which is money—nor of countless other factors which have an important bearing upon the situation.

ARTHUR CURRAN.

## Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian,  
Bureau of Railway Economics, Washington, D. C.)

### Books and Pamphlets

*Conquistador-American Fantasia*, by Philip Guedalla. A distinguished foreigner comments on our railroads in "Railroad" p. 40-44, "New York Central" p. 44-47, and "Waiting Room" p. 47-51. "America will be singularly fortunate if the next civilization remembers it by its railway stations" p. 49. 276 p. Pub. by Harper's, New York City. \$3.

*Daily River Stages at River Gage Stations on the Principal Rivers of the United States, Vol. XXV for the year 1927*, by H. C. Frankenfield, Senior Meteorologist. Weather Bureau publication no. 960, enabling one to follow the behavior of one's favorite rivers in what was a year of unusual floods. 184 p. Pub. by U. S. Govt. Print. Off., Washington, D. C., 35 cents.

*The Port of Portland, Maine*. Port series no. 1 Revised, prepared by the Board of Engineers for Rivers and Harbors, War Dept., in co-operation with Bureau of Operations, U. S. Shipping Board. "Railroads, switching charges, car demurrage, handling wharfage, storage, grain elevation, storage, etc., cartage, absorptions of terminal charges, etc." p. 69-80. 105 p. Pub. by U. S. Govt. Print. Off., Washington, D. C., 35 cents.

*The Graphic System of Calculating Rates and Freight Charges*, by T. Martin Jones. "The Graphic system of charting rates, explained in this paper, has been in use on this Railway (The Burma Railways) for about seven years and has been thoroughly tested. It is a rapid method and practically eliminates the possibility of errors..." p. 1. Technical Paper no. 265, Govt. of India Railway Board. 9 p. 5 diagrams. Pub. by Govt. of India Central Publication Branch, Calcutta, India. 8 annas or 10 pence.

### Periodical Articles

*Inauguration of Third-Class Sleeping Service on British Railways*, by Harold A. Burch. Illustrated description of types of equipment, and services. Commerce Reports, October 22, 1928, p. 225-226.

*The Cost of Private Air Travel*. "The cost of air travel seems to be nearing the figure of the automobile. The operating costs of a standard three-place, 200 horsepower, open cockpit biplane, is but 16 cents an airplane mile—and these are, so to speak, 'crow-fly' miles." Domestic Air News No. 39, October 31, 1928, p. 6.

## *Odds and Ends of Railroading*

The most recent addition to the list of colonels on the staff of the governor of Kentucky is George A. Vaughn, extra gang foreman on the Eastern Kentucky division of the Louisville & Nashville.

### **Millions of Crabs**

One and a half million soft shell crabs, 20,000 gal. of crab meat, and 1,000 bbls. of hard crabs moved from Crisfield, Md., over the Pennsylvania during the week of August 20. This week broke all records for crab shipments. They moved by rail over the Pennsylvania and its subsidiary steamship lines.

### **An Ace**

It almost seemed as if the present golfing season would pass into history without a railway hero. But no! Here, just under the wire, comes A. M. Crawford, district passenger agent of the Southern at Detroit, who holed his tee-shot on the 137-yard eighth hole at the Redford Country Club there. Mr. Crawford and his spade mashie won a season's membership at Redford by this feat.

### **The Bell-Cord Inventor**

Pappy Ayers, a pioneer Erie conductor, invented the bell cord. There was no way to signal the engineer if he failed to look back, except by sending a man ahead over the cars. One day Pappy Ayers tied a long rope to a stick of wood and hung it in the engine cab and carried the rope to the rear of the train. His idea was to pull the rope and agitate the stick of wood when he wanted the engineer to stop the train. But he had to lick the engineer before he would recognize the invention.

### **The First 25 Years Are the Hardest**

The ancient mariner who had "water, water everywhere, and not a drop to drink" was in a situation somewhat similar to that of Charles Elgersma, gang foreman at the Burnside shops of the Illinois Central. Mr. Elgersma, who helps to provide transportation for other people, is so fond of work that in his first 25 years as an employee of the Illinois Central System he never asked for a vacation or made a trip outside of Chicago on an Illinois Central train. He celebrated the summer of 1928, however, by traveling, with Mrs. Elgersma, to visit relatives in Cherokee, Iowa.

### **\$1.92 for Conscience Fund**

A man walked into the Pennsylvania ticket office at Fort Wayne, Ind. recently and left with the agent \$1.92 as the amount due on a journey made in 1919. The man, at that time, was doing ministerial work while attending school at Fort Wayne, but had been employed at the Kenton, Ohio railway shops during the summer. Upon his return to Fort Wayne in September he used his clergy permit and made the trip for half rate. Since that time he said he has come to feel that the permit was improperly used and thus he desired to square his account with the railroad.

### **A Youthful Hero**

The following may well seem to be taken bodily from the works of Horatio Alger, but it wasn't. It's an actual account of an incident that took place recently.

A 12-year-old boy waving a pocket handkerchief, stopped a Wildwood to Philadelphia train of the Atlantic City railroad just before it reached a 14-in. break in the rail. There were 300 passengers on the train, which, after the warning, started again and slowly passed over the break. The boy's father, John Anhalt, a farmer and hunter living at Swain, five miles north of Cape May Court House, N. J., heard a train go by toward Atlantic City and also heard a ripping sound. He went out to investigate, and found a piece of one rail ripped away. Apparently the track had been undermined by recent rains, and the

passing train had torn out the section. Coming along the same track, while Anhalt was examining the broken place, was another train bound for Philadelphia. Anhalt sent his son, John Jr., running down the track, waving a handkerchief, while he himself frantically waved a large piece of red, white and blue bunting. So pleased were the passengers that on the way to Philadelphia they collected \$125, and on the trip back to Wildwood the train made a special stop in front of Anhalt's home and the purse was presented to him. He gave it to his son.

### **A 13-Foot Ticket**

The competition for the honor of selling the longest railway ticket continues. The first news article on the subject referred to a ticket five feet, eight inches in length; the second, six feet; the third, nine feet six inches; the fourth, more than eleven feet; and now comes along Kenneth Hickman, passenger agent at New Brunswick, N. J. on the Pennsylvania, who, on August 8, sold to a woman passenger what is believed to be the longest ticket ever sold by anyone, anywhere. The ticket was a few inches over thirteen feet in length and read from New Brunswick to Chicago, Colorado Springs, Denver, Salt Lake, Pikes' Peak, West Yellowstone Park, Cody, Billings, Glacier National Park, Tacoma, Seattle, Vancouver, Seattle, Tacoma, Mt. Rainier, Portland, San Francisco, Los Angeles, San Diego, Los Angeles, Grand Canyon, Houston, New Orleans, Meridian, Birmingham, Bristol, Lynchburg, and Washington, D. C., to New Brunswick, N. J.

### **An Author-Railway Executive**

Had not his duties as a railway executive officer interfered, Paul Shoup, soon to be president of the Southern Pacific, might have been the author of best sellers. From 1896 to 1906, while Mr. Shoup was serving as telegrapher and agent at various points on the line, he wrote some 32 short stories, verses and essays. Moreover, he sold them to various newspapers and magazines in the west. They comprise railroad yarns and western stories and have the quality of that pungent wit and action that characterized the late O. Henry. Friends of Mr. Shoup gathered these stories together and, in 1924, published them privately in a book entitled, "Side Tracks from the Main Line". Unfortunately, the book was never offered for public sale, but it affords many a chuckle to anyone who comes across one of the rare copies.

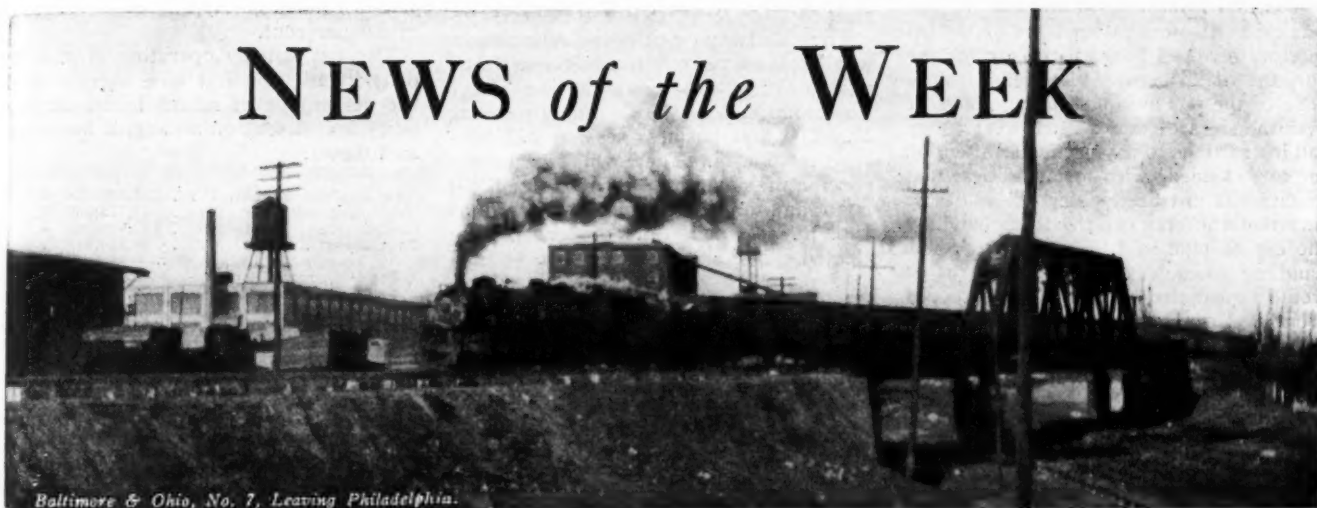
### **Trainload of Gold to Pay Rail Taxes**

Fourteen freight cars, each bearing approximately 49 tons of gold coin, would have been required to deliver the taxes paid last year by the Class I railways of the United States if these were paid in gold, according to an estimate made by T. O. Edwards, general auditor of the Southern Pacific.

"Railways now are paying more than one million dollars in taxes each day," Edwards said. "Last year taxes paid by the Class I railways amounted to \$376,110,243, or more than six per cent of their total operating revenues. This means that six cents out of every dollar paid by the public in passenger fares, for transportation of freight and incidental services, is actually paid for taxes. Excessive taxation subtracts from expenditures railroads might make out of earnings for needed improvements and extensions, increasing in amount the new capital expenditures required to maintain present high standards of railroad efficiency in a rapidly growing country. As the public is the railroad's only source of income, it is the public that indirectly must foot the tax bill for the carriers. Through greater efficiency of administration and economy of operation the railroads have greatly reduced the cost of transportation to the public, lower freight rates alone having effected a saving to the public of nearly \$836,000,000 since 1921. As the public reaps the benefit of all railroad economies, the lowering of railroad taxes, the single major expenditure over which railroads have no control, would be in the public interest."



# NEWS of the WEEK



Baltimore & Ohio, No. 7, Leaving Philadelphia.

THE SAFETY SECTION of the American Railway Association announces that its annual meeting next year will be held at Claypool Hotel, Indianapolis, Ind., on April 23, 24 and 25.

## Wage Statistics for August

The number of employees reported to the Interstate Commerce Commission by Class I railways as of the middle of August was 1,730,771 and their total compensation for the month was \$250,875,730, according to the commission's monthly compilation of wage statistics. Compared with the returns for the corresponding month last year, the number of employees shows a decrease of 65,423, or 3.64 per cent, and the total compensation decreased \$6,386,631, or 2.48 per cent.

## "Safety All the Time"

"In your work or play, through the night and day, think of safety, safety, all the time." The Long Island, more sorely afflicted by the careless motorist than any other railroad of its size, has set its latest safety lecture to music, and the lines just quoted are the beginning of the chorus. The title is as shown above, and the author and composer is William H. Heagney. It is proposed to make this air known in all the schools and it is hoped that pupils, teachers and parents will so enjoy the song that it will pervade the country; and become so popular as to sing itself.

## T. & N. O. Has Good Year

With the closing of the fiscal year of the province of Ontario on October 31 last one of the final acts of the Provincial Treasury was to deposit a check for \$1,300,000 from George W. Lee, chairman of the Temiskaming & Northern Ontario Railway, owned and operated by the Ontario government and serving the big mining region in Northern Ontario.

This represents the net operating surplus of the railway for the year and is the same as the surplus of last year. It was stated, however, that the amount

indicated the best year in the history of the road when an expenditure of \$300,000 on track and right of way repairs was taken into consideration. Full interest charges had also been met on the \$6,000,000 loan negotiated in the spring to carry out an extension program.

## A.R.A. to Meet November 21

The regular session of the American Railway Association will be held at the Biltmore Hotel, New York, on November 21 at 11 a. m.

Among others the following subjects will be considered:

Report of the Car Service Division on transportation conditions.

Report of board of directors on the following matters:

Activities of the Association since last member meeting.

Program of work contemplated by the divisions and sections of the association and budget covering the necessary expenditures in connection therewith for the year 1929.

The Railway Business Association will meet at the Commodore Hotel, New York, on the same day.

## Graybar to Be Sold to Officers and Employees

Graybar Management Corporation has been organized to enable the officers and other employees of the Graybar Electric Company Inc., to purchase the latter company from the Western Electric Company Inc. No officer or other employee of the American Telephone & Telegraph Company and the Western Electric Company or any other company, controlled by these, will own stock in the Graybar Management Corporation. The sale will be concluded on December 31, 1928. Since the organization of the Graybar Company in 1925 to take over the Western Electric Company's merchandising business in electrical supplies the trend of Graybar's business has been towards an increasing proportion of sales of electrical power and lighting supplies, furnished by various electrical manufacturers. The sale of products manufactured by the Western Electric Company is a relatively small proportion of the Graybar total business. In view of

this tendency and as it is the established policy of the Western Electric Company to devote itself primarily to furnishing telephone apparatus and supplies required by the Bell system it was decided to dispose of the Graybar Company.

## The American Standards Association

The 37 member bodies of the American Engineering Standards Committee have unanimously approved the establishment of the American Standards Association to succeed the earlier organization. The substitution of a new organization is expected to permit a greater degree of participation by trade associations in the direction of the national industrial standardization movement. One of the first acts of the new organization is to create a board of directors, composed of 12 industrial leaders. These include: J. A. Farrell, president, United States Steel Corporation; L. F. Loree, president, Delaware & Hudson and Gerard Swope, president, General Electric Company. The former Main Committee, composed of representatives of all member bodies, now becomes the Standards Council in whose hands will rest all matters connected with the adoption and approval of national standards.

## Report on Mounds Derailment

W. P. Borland, director of the Bureau of Safety of the Interstate Commerce Commission, has reported to that body on the derailment on the Illinois Central at Mounds, Ill., on August 6, when southbound passenger train No. 3 left the rails and sideswiped northbound passenger train No. 16, killing eight and injuring 144 persons. The facts disclosed in the investigation of the wreck were presented in the *Railway Age* of August 25, page 341. The report states that if the engineman of No. 203 which struck a length of cast iron pipe had reported the matter to the operator before leaving Mounds, there would have been ample time in which to have located the obstruction and have it removed before the arrival of No. 16 which threw the pipe against the track on which No. 3 was approaching.

A casual inspection of the car of pipe was made at Mounds but none of the inspectors involved boarded the car for the purpose of inspecting the lading, since none of the pipe was protruding above or over the sides of the car. However, they had instructions to pay particular attention to cars loaded with commodities that might shift in transit. Regardless of the fact that the crew of the train handling the car of pipe said there was no rough handling when leaving Mounds yards, it would appear that the pipe which dropped from the car less than one mile from where the train started must have been in a dangerous position and that this fact could have been detected had the proper inspection of the lading been made.

### New York State Grade Crossing Elimination

The Public Service Commission of the state of New York is considering the elimination in 1929 of no less than 431 highway grade crossings at a total estimated cost of over fifty six million dollars; and has this week begun what may be called preliminary public hearings; that is to say, these projects represent recommendations made to the commission by the State Department of Public Works by counties, cities, towns, etc., and also by the Commission itself; and, assuming that in some cases the work will have to be deferred, the consideration of detailed plans will be left for future hearings. The hearings this week are at Albany on November 8 and 9; and further hearings will be held in Buffalo, beginning on Monday next.

The Commission has issued a statement showing the proposed eliminations in each county. This statement includes the name of the crossing, the name of the railroad or railroads interested, the municipality in which the crossings are located and the estimated cost of each.

### W. R. Hammill Retired

The vicissitudes of life in the locomotive cab are strikingly illustrated in the career of William R. Hammill of the Atlantic City Railroad, who terminated a service of 39 years as locomotive engineman on that road on the evening of October 31. Mr. Hammill in all these years had had no fatal accident—no person killed by his locomotive—and his record showed only one or two unavoidable accidents, in which no persons were injured; until, on his last trip, about 7 p. m., as his train, express No. 28 from Atlantic City, was approaching Camden and was within two miles of its destination, an automobile was struck on a crossing, and two persons riding in it were killed, a man and his daughter.

Guests had already gathered for the testimonial dinner which was given to Mr. Hammill at the Railroad Y. M. C. A. in Camden that evening.

It is estimated that the trips which Mr. Hammill has made on the Atlantic City road as engineman will aggregate more than 2,500,000 miles. He has been in the service of the road 12 years before being made an engineman.

### R.B.A. To Meet on November 21

The Railway Business Association will hold its twentieth anniversary annual meeting and dinner at the Hotel Commodore, New York, on November 21. The first business session will convene at 10 a. m. There will be a luncheon for the committee members at 12:30 noon and another business session at 1 p. m. at which time officers will be elected. The annual dinner will be held at 7 p. m.

Final arrangements for speakers have not been completed, but the following partial list has been made public: At the dinner, Robert C. Fulbright, chairman of the legislative committee of the National Industrial Traffic League, whose address will be entitled, "Shall Congress or the Commission Regulate Rates?", and Professor-Emeritus Albert Bushnell Hart of Harvard, the historian, whose address will be entitled "George Washington, Business Man".

Forum speakers at the business sessions will include C. A. Heiss, comptroller of the American Telephone & Telegraph Company, Frank W. Noxon, secretary of the Railway Business Association, and Frederic W. Keough, representing George Eastman. Mr. Heiss' paper will be on the Telephone Companies' Budgets; Mr. Noxon's on Railway Legislative Problems and Mr. Keough's on Simplification of the Calendar.

The American Railway Association will meet in New York at the Hotel Biltmore on the same day.

### Revenues and Expenses for September

Class I railroads in September had a net railway operating income amounting to \$134,512,927, at the annual rate of return of 5.04 per cent on their property investment, according to reports compiled by the Bureau of Railway Economics. In September, 1927, their net railway operating income was \$133,094,300 or 5.11 per cent.

Operating revenues for the month amounted to \$556,044,022, a reduction of 1.7 per cent. Operating expenses totaled \$375,646,483, a decrease of 2.8 per cent. Class I railroads in September paid \$35,547,207 in taxes, a decrease of five-tenths of one per cent under the total for same month in 1927. This brought the total tax bill of the Class I railroads for the first nine months in 1928 to \$285,568,967, a decrease of \$1,897,304 or seven-tenths of one per cent below that of the corresponding period in 1927.

Twelve Class I railroads operated at a loss in September of which seven were in the Eastern district, two in the Southern and three in the Western.

For the first nine months in 1928 the net railway operating income was \$819,854,881, at the annual rate of 4.55 per cent. During the corresponding period of the preceding year it amounted to \$809,958,964 or 4.60 per cent on their property investment.

Operating revenues for the nine months amounted to \$4,534,169,967, a decrease of 2.7 per cent. Operating ex-

penses totaled \$3,341,042,186, a decrease of 3.9 per cent.

The net railway operating income by districts for the first nine months with the percentage of return based on property investment on an annual basis was as follows:

New England Region.....	\$30,351,668	4.45%
Great Lakes Region.....	147,473,369	4.74%
Central Eastern Region.....	182,950,760	4.77%
Pocahontas Region.....	54,254,948	6.96%
Total Eastern District.....	\$415,030,745	4.94%
Total Southern District.....	92,245,070	4.08%
Northwestern Region.....	\$95,642,052	4.06%
Centralwestern Region.....	144,698,779	4.25%
Southwestern Region.....	72,238,235	4.60%
Total Western District.....	\$312,579,066	4.26%
United States .....	\$819,854,881	4.55%

The net railway operating income in the Eastern District for the nine months totaled \$415,030,745, at the rate of 4.94 per cent. For the same period in 1927 their net was \$428,018,674, or 5.21 per cent. Operating revenues in the Eastern District totaled \$2,233,784,764, a decrease of 4.7 per cent, while operating expenses totaled \$1,642,333,545, a decrease of 5.6 per cent.

For September the net railway operating income was \$61,916,553, compared with \$59,589,238 in September 1927.

Class I railroads in the Southern District for the nine months had a net railway operating income of \$92,245,070, at the rate of 4.08 per cent. For the same period in 1927 it amounted to \$104,718,409, at the rate of 4.76 per cent. Operating revenues for the nine months amounted to \$573,327,473, a decrease of 6.9 per cent, while operating expenses totaled \$439,106,352, a decrease of six per cent. The net railway operating income in September totaled \$10,999,983, while in the same month in 1927 it was \$14,243,562.

Class I railroads in the Western District for nine months had a net of \$312,579,066 at the rate of 4.26 per cent. For nine months in 1927 they had a net of \$277,221,881, at the rate of 3.87 per cent. Operating revenues for the nine months amounted to \$1,727,057,730, an increase of 1.7 per cent, while operating expenses totaled \$1,259,602,289, a decrease of seven-tenths of one per cent. For the month of September, the net in the Western District amounted to \$61,596,391. The net railway operating income of the same roads in September 1927 totaled \$59,261,500.

### Class I Railroads—United States

	Month of September 1928	1927
Total operating revenues .....	\$556,044,022	\$565,468,544
Total operating expenses .....	375,646,483	386,607,150
Taxes .....	35,547,207	35,357,186
Net railway operating income .....	134,512,927	133,094,300
Operating ratio—		
per cent .....	67.56	68.37
Rate of return on property investment .....	5.04%	4.11%
Nine months ended September 30		
Total operating revenues .....	\$4,534,169,967	\$4,658,184,219
Total operating expenses .....	3,341,042,186	3,474,911,963
Taxes .....	285,568,967	287,466,271
Net railway operating income .....	819,854,881	809,958,964
Operating ratio—		
per cent .....	73.69	74.60
Rate of return on property investment .....	4.55%	4.60%



## Equipment and Supplies

### Locomotives

THE ST. LOUIS-SAN FRANCISCO is inquiring for 12 locomotives of the 2-8-4 type.

THE CHICAGO BURLINGTON & QUINCY is inquiring for six locomotives of the 2-10-4 type.

THE DENVER & RIO GRANDE WESTERN has ordered 10 locomotives of the 4-8-4 type from the Baldwin Locomotive Works. Inquiry for this equipment was reported in the *Railway Age* of September 29.

### Freight Cars

THE SWIFT REFRIGERATOR LINE will build 300 refrigerator cars in its own shops.

THE CHICAGO & NORTH WESTERN is inquiring for 25 hopper cars, 300 flat cars and 400 low side gondola cars.

THE NORTHERN REFRIGERATOR CAR COMPANY has ordered 300 refrigerator cars from the Pullman Car & Manufacturing Corporation.

THE CANADIAN PACIFIC has ordered 250 refrigerator cars from the National Steel Car Corporation, 275 ballast cars from the Canadian Car & Foundry Co., 300 flat and 300 coal cars from the Eastern Car Company.

THE CANADIAN NATIONAL has ordered 1600 box cars of 50 tons capacity and 30 tank cars from the Canadian Car & Foundry Company; 750 box cars of 50 tons capacity from the National Steel Car Corporation and 500 refrigerator cars from the Eastern Car Company.

THE AMERICAN REFRIGERATOR TRANSIT COMPANY has ordered 1,000 refrigerator cars from the Pressed Steel Car Company. Inquiry for this equipment was reported in the *Railway Age* of Oct. 13.

### Passenger Cars

THE CANADIAN PACIFIC has ordered 29 sleeping cars from the Canadian Car & Foundry Company and 15 coach frames from the National Steel Car Corporation.

THE CANADIAN NATIONAL has ordered 30 standard sleeping cars from the Canadian Car & Foundry Company and 25 first class coaches from the National Steel Car Corporation.

THE CHICAGO, SOUTH SHORE & SOUTH BEND, which ordered 10 rail motor cars from the Standard Steel Car Company with an option on 5 additional cars and 5 trailers, as reported in the *Railway Age* of May 19, has exercised the option.

THE NEW YORK CENTRAL has contracted with the American Car & Foundry Company for the rebuilding of thirty passenger coaches. This work consists of applying complete new steel superstructures to steel underframes in place of wooden superstructures and also increasing the seating capacity.

### Signaling

THE SOUTHERN PACIFIC has ordered from the Union Switch & Signal Company color-light signals and other material preparatory to the establishment of automatic block signaling at various points on the Sacramento, San Joaquin, Tucson, Western, Rio Grande and Coast divisions; 670 high signals, 50 dwarf signals, 840 switch circuit controllers, 1000 relays and other material.

### Dispatcher Control on the T. & P.

The Texas & Pacific has ordered from the General Railway Signal Company material for the installation of the G. R. S. dispatcher system on its line between Dallas, Tex., and Fort Worth; 20 miles of double track and ten miles of single. Color-light signals, type D, are to be used. The double track line is to be signaled for movements in both directions on either track. The dispatching machine will be at Arlington, about midway between the two termini and from it will be operated 18 switches and 35 signals. The automatic train sheet at Arlington will record the movements of trains at 17 points.

### Iron and Steel

THE CHICAGO, INDIANAPOLIS & LOUISVILLE has ordered 5,000 tons of rail from the Illinois Steel Company.

THE CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC has ordered 40,000 tons of rails from the Illinois Steel Co., and 10,000 from the Inland Steel Company.

### New York Central Orders Rail and Accessories to Cost \$10,326,000

The New York Central line announced the purchase of 191,550 tons of steel rail for delivery next year at a total cost of about \$8,250,000. Of this tonnage 70 per cent has been ordered for immediate specifications and an option taken on the balance. The orders have been distributed among the following manufacturers:

Company	Tons
Bethlehem Steel Company.....	82,030
Dominion Iron & Steel Company.....	11,690
Carnegie Steel Company.....	13,310
Illinois Steel Company.....	69,140
Inland Steel Company.....	15,380

In addition to the above the New York Central lines have also placed orders for about \$2,076,000 worth of splice bars, etc.

### Machinery and Tools

THE CHICAGO, ROCK ISLAND & PACIFIC has ordered two 15-ton overhead electric cranes from the Harnischfeger Corporation.

## Supply Trade

The Flick Construction Company, Chicago, has changed its name to the Clinch-Mitchell Construction Company.

The Youngstown Sheet & Tube Company has opened an office in room 113, Fischer building, Detroit, Mich.

C. A. Liddle, vice-president of the Pullman Car & Manufacturing Corporation has been elected president, to succeed D. A. Crawford who has been elected executive vice-president of the Pullman Company.

The Ohio Injector Company, Wadsworth, Ohio, has opened a southwestern branch office at 908 Daniels building, Tulsa, Okla., with E. C. Powell in charge.

N. J. Kamen, representative of the Detroit Lubricator Company, New York, has been appointed sales and service engineer in the railroad department of the Alemite Manufacturing Corporation, Chicago.

Henry J. Saunders, formerly assistant supervising engineer, Bureau of Valuation, Interstate Commerce Commission, has opened an office as consulting engineer at 643 Transportation building, Washington, D. C.

T. H. Williams has been appointed manager of railway sales of the Gunderson Process. This process is used for the prevention of pitting, grooving, and general corrosion in locomotive boilers, and is being manufactured and sold by the Electro-Chemical Engineering Corporation, 621 South Kolmar avenue, Chicago.

John A. Manley, manager of sales development of Fairbanks, Morse & Co., Chicago, has been elected vice-president in charge of sales. He graduated from



John A. Manley

Northwestern University in 1911 and entered the sales department of the Republic Tire & Rubber Company. In 1915 he joined the advertising staff of one of

the Chicago newspapers and later entered the employ of Hart, Schaffner & Marx. He resigned from this position to become manager of accounts of Henri, Hurst & McDonald, Chicago, and in 1925 became associated with Fairbanks, Morse & Co. as manager of sales, which position he has held until his recent election.

## Obituary

**Walter W. Nowak**, European manager of the Niles-Bement-Pond Company and the Pratt & Whitney Company, died in Paris on November 1. He had been with the affiliated companies since his graduation from Cornell University in 1905, representing them at first on the Pacific Coast and later in Chile, Argentine and Brazil. For the last ten years, he had been in entire charge of the European business of the companies with headquarters in London and Paris.

**John K. Shaw**, vice-president and director of the Celotex Company was killed by the accidental discharge of his shotgun while duck hunting near Arlington, S. D., on November 2. He was born on August 3, 1872, in Dane county, Wis., and was educated at Poinette Academy in Wisconsin and the Northern Indiana College, Valparaiso, Ind. After completing his schooling he engaged in



John K. Shaw

furniture manufacturing as a member of the firm of Peek, Dahlberg & Shaw, Minneapolis, Minn. In 1910 he became associated with B. G. Dahlberg, and from 1917 to 1921 was sales manager of the Insulite Company, Minneapolis. He was one of the organizers of the Celotex Company in 1920, being elected vice-president and sales manager. During the past year he relinquished his duties as sales manager in order to rest.

**Egbert Habberton Gold**, president of the Vapor Car Heating Company, Inc., Chicago, died at his summer home at Holland, Mich., on November 3, after an illness of four months. He was born in Cornwall, Litchfield county, Conn.,

on January 31, 1868, and graduated from Stevens Institute of Technology in 1889. Mr. Gold started in the car heating business with the Gold Car Heating & Lighting Company and in 1903 established business under his own name. In 1906 he organized the Chicago Car



Egbert Habberton Gold

Heating Company, of which he was the president until 1917, when the Chicago Car Heating Company and the Standard Heat & Ventilation Company, New York, combined and formed the Vapor Car Heating Company of which company he was elected president which position he held until his death.

## Trade Publications

**COPPER-BEARING STEEL BUILDINGS.**—An illustrated, 37-page catalogue, No. 1057, has been issued by the Blaw-Knox Company, Pittsburgh, Pa. which describes types of standard steel buildings manufactured by that company, and shows the use being made of these buildings in a number of industries.

**TIMBER PRESERVATIVE.**—The Curtin-Howe Corporation, timber preservation engineers, 11 Park Place, New York City, has issued a booklet containing a technical discussion of zinc meta arsenite and other subjects of interest to those concerned with timber preservation. The features of this booklet are three papers entitled: "Chemical Reaction to Wood Destroying Fungi," and "Chemistry and Toxicity Data," by Dr. L. P. Curtin, chemist of the Western Union Telegraph Company; and "Weathering the Field Tests," by Paul J. Howe, construction engineer of the same company. All three of these papers were presented at the convention of the American Wood Preservers' Association at Montreal, last January.

**THE RAILROAD COMMISSION OF CALIFORNIA** has just completed the work of numbering and tagging the 15,000 grade crossings in the state and will soon distribute a pamphlet containing the numbers and locations.

## Construction

**BIG SANDY & CUMBERLAND.**—This company has awarded contracts for the construction of a line from Devon, W. Va., to Grundy, Va., and to a point on the Levisa river, a total of 39 miles. Section 1, which includes the driving of a 1,500-ft. tunnel and is about 1 mile long, was let to W. W. Boxley, Roanoke, Va. Section 2, about 13 miles long, was let to Sturman-Dillard, Columbus, Ohio. Section 3 and Section 4 which are about 11 miles and 14 miles long respectively and include the driving of a 3,750-ft. tunnel, were let to H. W. Nelson, Chicago.

**BUFFALO, ROCHESTER & PITTSBURGH.**—This road has under consideration the construction of a modern steel car repair shop for which an expenditure of approximately \$500,000 is planned. The location of the shop has not been determined and a study is being made with a view of selecting the most advantageous site. Among the places being considered are Buffalo, Rochester, Lackawanna and Salamanca, N. Y., and Bradford, DuBois Punxsutawney, Pa.

**CANADIAN NATIONAL.**—A contract for the fabrication and erection of a bridge over Minnewashta creek near Miniota, Man., has been let to the Manitoba Bridge and Iron Works, Winnipeg, Man. The cost of the superstructure of this bridge is estimated at \$300,000.

**CANADIAN NATIONAL.**—A contract has been let to the Dominion Bridge Company, Ltd., Winnipeg, Man., for the fabrication and erection of the steel superstructure of a bridge at the third crossing of Moose Jaw Creek at Moose Jaw, Sask. This bridge will consist of two 90-ft. deck plate girder spans, one 175-ft. deck truss span and two 42-ft. deck plate girder spans on a concrete sub-structure and will replace two 100-ft. deck Howe truss spans and one 120-ft. deck Howe truss span with trestle approaches. About 400 tons of structural steel are involved in this project. Company forces will be employed in construction of the sub-structure.

**CHESAPEAKE & OHIO.**—The Interstate Commerce Commission has denied this company's further petition for reconsideration and reargument of the case in which the commission granted certificates to the Norfolk & Western and Virginian authorizing the construction of extensions in the Guyandot Valley of West Virginia while denying the application of the C. & O. for a certificate. The commission also vacated its postponement of the effective date of the certificates so as to make them effective at once.

**EUCLID.**—A contract for the relocation and reconstruction of the line of this railroad at Cleveland, Ohio, has been awarded to the William E. Steyding Company, Cleveland. The cost of the project is estimated at \$30,800 of which \$21,000



will be borne by the Green Road Realty Association.

**HUDSON BAY.**—Construction forces of the Canadian National have undertaken the construction of a passenger station for this line at the Pas, Man, which will have outside dimensions of 26 ft. by 157 ft. Special attention has been given to waterproofing and insulation because of the climatic conditions in that part of Manitoba. The exterior walls and floor will be coated with felt, pitch and waterproofing. The concrete basement wall will be carried up to window sill level and the exterior walls will be brick veneered.

**MEXICALI & GULF.**—A contract has been awarded to C. E. Crowley, Los Angeles, Cal., for the grading of 21 miles of roadbed and the construction of 28 bridges and culverts in the states of Sonora and Baja California, Mexico. The contract will involve the excavation of 550,000 cu. yd. of earth and the construction of nearly two miles of trestles in order to effect a crossing of the Colorado River delta. About 22 miles of line, from Mexicali, B. Cfa., to a point on the west bank of the Colorado River, have already been constructed and it is planned eventually to extend the railroad to Puerto Otis, B. Cfa., on the Gulf of California, a total of about 82 miles.

**MISSOURI-KANSAS-TEXAS.**—A contract has been let to T. H. Johnson, Sedalia, Mo., for the construction of an eight-stall roundhouse and a machine shop at Smithville, Tex. The entire project will involve an expenditure of approximately \$300,000.

**MISSOURI-KANSAS-TEXAS.**—This company has ordered equipment from the Roberts & Schaeffer Company, Chicago, for the construction of a sand storage and drying plant at Smithville, Tex.

**MISSOURI PACIFIC.**—This company has closed bids for the construction of a line between Illmo, Mo., and a point south of Cape Girardeau, Mo., a distance of six miles. This line will connect with the Cape Girardeau and Northern and provide the Missouri Pacific with an entrance into Cape Girardeau. With rehabilitation of yard and freight facilities the project will involve an expenditure of about \$500,000. The new line will be operated as part of the Illinois division.

**NEW YORK CENTRAL.**—Several contracts have recently been awarded by this road for work on its lines in New York and New Jersey. One, for the construction of a coach yard and truck platform at Buffalo, N. Y., was awarded to the John Johnson Construction Company, Buffalo, N. Y.; a second, for the elimination of a grade crossing at Second and Akin avenues, Rensselaer, N. Y., went to the Bates & Rogers Construction Company, Inc., Chicago; a third, for piping work at the road's Harmon, N. Y., power house went to W. F. Crane & Company, New York; the fourth, for the construction of ash pits at its Wayneport, N. Y., coaling station, went to W. M. Ballard, Inc., Syracuse, N. Y., while the fifth, for the replacement of grain cleaning machinery in its elevator at

Weehawken, N. J., was awarded to the M. A. Long Company, Baltimore, Md.

**PENNSYLVANIA.**—This road has awarded a contract to W. F. Trumble & Sons, Co., Pittsburgh, Pa. for the erection of a fruit auction building at that point. The estimated cost of this work is approximately \$500,000.

**PENNSYLVANIA.**—A contract has been let by this road to the Roberts & Schaeffer Company, Chicago, for the construction of a combined engine coaler and electric cinder plant at Washington, Pa.

**PENNSYLVANIA.**—This road has awarded a contract to the Crosoau Construction Company, Brownsville, Pa. for work in connection with the erection of an engine-house, office and locker building and turntable pit at Benwood, W. Va. The work is expected to cost approximately \$95,000. A second contract for the construction of an overhead highway bridge, to cost approximately \$33,000, at Farnhurst, Del., was awarded to the T. J. Foley Company, Pittsburgh, Pa., while a third for the construction of a new signal tower at Lancaster, Pa., went to D. S. Warfel, Lancaster, Pa.

**SEABOARD AIR LINE.**—This road has awarded a contract to C. V. York Co., Inc., Raleigh, N. C. for the construction of a freight depot at Savannah, Ga. The project, which is expected to cost approximately \$50,000, was announced in the *Railway Age* issue of June 2.

**SOUTHERN.**—A contract for the construction of a 1,000-ton capacity reinforced concrete automatic conveyor type coaling station with sanding facilities at Asheville, N. C., has been let to Fairbanks Morse & Co., Chicago. Another contract has been awarded to Fairbanks, Morse & Co. for the construction of a 1,000-ton capacity reinforced concrete automatic conveyor type coaling station, sanding facilities and a two-track cinder conveyor at Air Line Junction, Charlotte, N. C.

**VIRGINIAN.**—This road has authorized the construction of 40.6 miles of line along the Guyandot river from Itmann to Gilbert, W. Va. The entire project is expected to cost approximately \$7,500,000 and bids will be asked in the near future for the construction of the first 16.5 miles.

\* \* \*



On the Boston & Maine

## Financial

**ALABAMA & WESTERN FLORIDA.**—*Operation Authorized.*—The Interstate Commerce Commission has authorized this company to operate a 19-mile line from Chipley, Fla., southerly to Greenhead and to operate, through trackage rights or purchase a line of similar length from Greenhead southerly to Southport.

**ATCHISON, TOPEKA & SANTA FE.**—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue \$30,204,000 of 20-year 4½ per cent convertible debenture bonds, for the purpose of reimbursing its treasury, to be offered for subscription by holders of the common stock in the ratio of \$100 of bonds for each eight shares of stock held. They are to be convertible at any time from December 1, 1930 to December 1, 1938 into common stock in the ratio of six shares of stock for \$1000 of bonds.

**ATCHISON, TOPEKA & SANTA FE.**—*Debentures.*—The board of directors on October 30 authorized the execution of an indenture to be dated December 1, 1928, between this company and Guaranty Trust Company of New York as trustee, and the issue thereunder of \$30,204,000 twenty-year 4½ per cent convertible debenture bonds, and the offer to holders of common stock as of November 23, 1928, the right to subscribe at par and accrued interest from December 1, 1928, for a par amount of said bonds in the proportion of \$100 for each eight shares of common stock. The issue will be convertible at any time on or after December 1, 1930, and prior to December 1, 1938, at the option of the holders, into paid-up common stock in the ratio of six shares of common stock to each \$1,000 bond. Such bonds while unsecured will be the direct and unconditional obligation of the company and will be redeemable on any interest date after December 1, 1938, at 102 per cent of par and accrued interest. The issue is subject to the approval of the Interstate Commerce Commission.

**ATLANTIC COAST LINE.**—*Bonds.*—The Interstate Commerce Commission has authorized this company to issue \$2,800,000 of general unified mortgage 50-year series A 4½ per cent bonds, to be sold at not less than 96½ and proceeds used to meet a maturity of Alabama Midland bonds of similar amount.

**CHICAGO, TERRE HAUTE & SOUTHEASTERN.**—*Bonds.*—The Interstate Commerce Commission has authorized this company to issue \$951,000 of first and refunding 50-year 5 per cent bonds to the Chicago, Milwaukee, St. Paul & Pacific in reimbursement for expenditures made by the latter company, the latter company to assume liability as to principal and interest on these bonds.

**ERIE.**—*Trackage Rights.*—The Interstate Commerce Commission has authorized this company to operate under trackage rights over 1.9 miles of the Lehigh Valley in

Rochester, N. Y., thereby securing entrance to the Rochester Subway Railroad.

**ERIE. — Equipment Trust.** — The Interstate Commerce Commission has authorized this company to assume obligation and liability in respect of \$5,340,000 of its equipment trust of 1928 certificates to be issued by the Bank of North America & Trust Co., dated September 1, 1928, and sold at not less than 96.785 of par and accrued dividends; interest rate, 4½ per cent; sold to Salomon Bros. & Hutzler.

**KINSTON, CAROLINA. — Abandonment.** — This company has applied to the Interstate Commerce Commission for authority to abandon its line from Kinston to Beulaville, N. C., 31 miles.

**MCCLOUD RIVER. — Operation of Extension Authorized.** — The Interstate Commerce Commission has authorized the operation in interstate commerce by this company of a 7.8-mile line from Slagger Creek to Pondosa, Calif.

**MINNEAPOLIS & ST. LOUIS. — Receiver's Certificates.** — The Interstate Commerce Commission has authorized the receiver of this company to issue certificates to the value of \$500,000 to renew others of like amount maturing in October and November.

**MISSOURI PACIFIC. — Acquisition and Construction.** — The Interstate Commerce Commission has authorized this company to construct a line from a connection with the Southern Illinois & Missouri at Illmo, Mo., north to the right of way and tracks formerly owned by the Cape Girardeau Northern, 3.3 miles, and the necessary reconstruction of the Cape Girardeau Northern northward 6.7 miles.

**MONONGAHELA. — Acquisition of Chartiers Southern.** — The Interstate Commerce Commission has authorized this company, which is controlled jointly by the Baltimore & Ohio, the Pennsylvania and the Pittsburgh & Lake Erie, to acquire and operate the lines of the Chartiers Southern, including extensions under construction or projected and to complete such extensions.

**NAPLES, SEABOARD & GULF. — Bonds.** — The Interstate Commerce Commission has authorized this company to issue \$104,000 of first mortgage, 6 per cent bonds, series A, to be delivered to the Seaboard Air Line in repayment of advances.

**READING. — Acquisition of Control of Port Reading.** — The Interstate Commerce Commission has authorized this company to operate the Port Reading under contract for a period of ten years or more to eliminate separate accounting.

#### Average Price of Stocks and of Bonds

	Nov. 7	Last week	Last year
Average price of 20 representative railway stocks.	123.38	122.11	119.30
Average price of 20 representative railway bonds.	93.85	93.51	96.46

#### Dividends Declared

Atlantic Coast Line. — Preferred, 2½ per cent, payable November 10 to holders of record October 26 to November 10.

## Officers

### Executive

**J. C. Carter** has been appointed personal representative of the executive vice-president of the Southern Pacific Lines in Texas and Louisiana, with headquarters at Houston, Tex.

**D. A. Crawford**, president of the Pullman Car & Manufacturing Corporation, Chicago, has been elected executive vice-president of the Pullman Company, with headquarters at the same point. **Judson C. Welliver** has been appointed assistant to the president of the Pullman Company, with headquarters at Chicago.

**John N. Cornatzar**, who has been promoted to assistant vice-president of the St. Louis-San Francisco, with headquarters at St. Louis, Mo., has been in the service of that railroad for nearly 30 years. He was born in 1871 at Bolivar, Tenn., and entered railway service at the age of 16 years as a telegraph operator on the Mobile & Ohio. Later Mr. Cornatzar was transferred to the traffic department of the M. & O. and served



John N. Cornatzar

successively as traveling passenger agent and southeastern passenger agent of that railroad, as general agent for the Kansas City, Fort Scott & Memphis (now part of the Frisco) at Atlanta, Ga., and as division passenger agent and assistant general passenger agent on the Frisco at Memphis. In January, 1915, he was promoted to general passenger agent with headquarters at St. Louis, then being further promoted to passenger traffic manager on March 1, 1920. Mr. Cornatzar was given the additional title of director of development in March, 1928. His promotion to assistant vice-president of the Frisco became effective on October 15.

**Dalton C. Olmstead**, who has been promoted to assistant to the vice-president in charge of operation of the Union

Pacific System, with headquarters at Omaha, Neb., has been connected with the operating department of that railroad for about 30 years. He was born at Vestal, N. Y., on August 15, 1878, and entered railway service as a telegraph operator on the Delaware, Lackawanna & Western on November 1, 1898. The following year he became a telegraph operator on the Union Pacific at Milford, Utah. He was soon advanced to clerk and from 1902 to 1904 served as station agent at a number of points in Idaho, then serving from the latter date as timekeeper and accountant until 1907, when he was advanced to chief clerk to the assistant superintendent. In 1908 he was promoted to chief clerk to the superintendent at Ogden and from 1912 to 1920 he acted successively as trainmaster, assistant superintendent, chief clerk to the general superintendent and chief of the authority for expenditures bureau. Mr. Olmstead was then promoted to assistant to the general manager, with headquarters at Omaha. His promotion to assistant to the vice-president became effective on Nov. 1.

### Financial, Legal and Accounting

**W. M. Holden**, acting secretary and acting treasurer of the Colorado & Southern, has been elected secretary and treasurer, with headquarters as before at Denver, Colo.

**T. H. Seay**, general auditor of the Southern, with headquarters at Washington, D. C., has also been appointed general auditor of the Mobile & Ohio.

**F. C. Keith**, assistant auditor of miscellaneous accounts of the Chicago, Burlington & Quincy has been promoted to auditor of miscellaneous accounts, with headquarters as before at Chicago.

**K. L. Richmond**, assistant general solicitor of the Chicago & Eastern Illinois, has been promoted to general solicitor, with headquarters as before at Chicago, succeeding **Homer T. Dick**, deceased. **J. F. Connors** has been appointed assistant general solicitor, replacing Mr. Richmond. **T. N. Cook** has been appointed attorney with headquarters at Chicago.

**M. L. Countryman, Jr.**, and **Frederick D. McCarthy**, general attorneys of the Northern Pacific, have been promoted to assistant general counsels, with headquarters as before at St. Paul, Minn. **F. J. Gehan** has been appointed assistant to the general counsel, with headquarters at St. Paul.

### Operating

**George A. Handlon**, chief clerk to the general superintendent of the Litchfield & Madison and the Alton & Eastern, has been promoted to general superintendent, with headquarters at Edwardsville, Ill.



**J. R. Hitchcock**, assistant general manager of the Coast Lines of the Atchison, Topeka & Santa Fe, with headquarters at Los Angeles, Cal., has been appointed acting general manager of the Western Lines, with headquarters at Amarillo, Tex., temporarily succeeding **R. H. Allison**, who has been granted a leave of absence. **F. J. Mackie**, superintendent of the Plains division, with headquarters at Amarillo, has been appointed acting assistant general manager of the Coast Lines, succeeding Mr. Hitchcock.

**B. O. Scott**, supervisor of track and structures of the Chicago, Springfield & St. Louis and the Jacksonville & Havana, with headquarters at Palmyra, Ill., has been appointed superintendent, with headquarters at Springfield, Ill.

**Dr. O. B. Zeinert**, assistant chief surgeon of the Missouri Pacific, has been promoted to chief surgeon, with headquarters as before at the Missouri Pacific Hospital at St. Louis, Mo. He succeeds **Dr. Paul F. Vasterling**, who has been promoted to consulting surgeon, with headquarters at the Missouri Pacific Hospital.

**C. W. Exline** has resumed his duties as trainmaster of the St. Louis district of the Eastern division of the Missouri Pacific at Jefferson City, Mo., following a leave of absence. He replaces **R. E. Allen**, acting trainmaster of the St. Louis district, who resumes his duties as trainmaster of all districts of the Eastern division, with headquarters at Jefferson City.

**F. A. Bogue**, trainmaster on the Cedar Rapids-Minnesota division of the Chicago, Rock Island & Pacific at Cedar Rapids, Iowa, has been transferred to the Illinois division at Blue Island, Ill., succeeding **Victor H. Hagelbarger**, deceased. **W. W. Cameron**, trainmaster at Estherville, Iowa, has been transferred to Cedar Rapids to succeed Mr. Bogue.

**J. T. Ridgely**, engineer of maintenance of way of the Long Island, with headquarters at Jamaica, N. Y., has been appointed superintendent of the Indianapolis division of the Pennsylvania, with headquarters at Indianapolis, Ind. A sketch of Mr. Ridgely's railway experience appeared in the *Railway Age* of January 14, 1928, page 172, at the time of his appointment as engineer of maintenance of way of the Long Island. **A. J. Pierrung**, general yardmaster on the Pennsylvania at Cincinnati, Ohio, has been promoted to assistant trainmaster on the Indianapolis division at Indianapolis.

**H. B. Lautz**, superintendent of the middle division of the Atchison, Topeka & Santa Fe with headquarters at Newton, Kans., has been promoted to assistant general manager of the Northern district with headquarters at La Junta, Colo., succeeding **C. H. Bristol** who has been appointed assistant to the

general manager of the Western lines with headquarters at Amarillo, Tex. **G. G. Derby**, superintendent of the Southern Kansas division with headquarters at Chanute, Kan., has been transferred to the middle division to succeed Mr. Lautz. **A. A. Gist**, trainmaster of the Southern Kansas division, has been promoted to superintendent of that division, replacing Mr. Derby. These appointments became effective November 10.

## Traffic

**John A. Ferguson**, commercial agent of the Erie, with headquarters at Pittsburgh, Pa., has been appointed coal freight agent, with the same headquarters.

**George C. Marquardt** has been appointed assistant foreign freight agent of the Chesapeake & Ohio, with headquarters at Chicago, Ill., succeeding **R. B. Falkiner**, resigned.

**Fred W. Johnson**, city passenger agent for the Chicago, Burlington & Quincy at Denver, Colo., has been promoted to assistant general agent in the passenger department at the same point.

**J. C. Peterson**, general agent in the freight department of the Minneapolis, St. Paul & Sault Ste. Marie at Minneapolis, Minn., has been promoted to assistant general freight agent at the same point.

**J. C. Owens** has been appointed Canadian freight and passenger agent of the New York Central, with headquarters at Montreal, Que., succeeding **W. E. Maloney**, resigned to engage in other business.

**Henry E. Bulla**, general agent in the passenger department of the Chicago Great Western at Des Moines, Ia., has been promoted to assistant general passenger agent, with headquarters at Kansas City, Mo., succeeding **George Bristow**, deceased. **S. M. Lundberg**, city passenger agent at Kansas City has been promoted to general agent in the passenger department at Omaha, Neb., replacing **Eugene M. Peck**, who has been transferred to Des Moines to succeed Mr. Bulla.

**John W. Nourse**, who has been promoted to passenger traffic manager of the St. Louis-San Francisco, with headquarters at St. Louis, Mo., has been in the service of that railroad and the railroads which have been consolidated with it for about 37 years. He was born at Detroit, Mich., on September 25, 1871, and, after attending college for one year, entered railway service in January, 1891, on the Kansas City, Fort Scott & Memphis (now part of the Frisco). Mr. Nourse served in various positions with the K. C., F. S. & M. and the Frisco and in 1917 he was promoted to assistant general passenger agent of the

Frisco at St. Louis, Mo. In 1922 he was further promoted to general passenger agent, with headquarters at St.



John W. Nourse

Louis. His promotion to passenger traffic manager became effective on October 15.

**Joseph W. James**, who has been promoted to traffic manager of the Second district of the St. Louis-San Francisco, with headquarters at Tulsa, Okla., has been in railway service for more than 38 years. He was born on August 10, 1879, at Cooper's Plains (now Cooper's), Stueben County, N. Y. and began



Joseph W. James

his railway work at the age of 15 years as a telegraph operator on the Delaware, Lackawanna & Western. From 1894 until 1918 Mr. James served successively as telegraph operator, agent, yardmaster, train dispatcher, general yardmaster, chief train dispatcher, trainmaster, special representative of the president and general manager and assistant to the general manager on the Great Northern, the Union Pacific, the Southern Pacific, the Louisville & Nashville, the Atlantic Coast Line, the Cleveland, Cincinnati, Chicago & St. Louis, the Pennsylvania, the Missouri-Kansas-Texas, the Frisco, the Chicago & North Western, the Northern Pacific, the Grand Trunk, the Atchison, Topeka &

Santa Fe and the Buffalo, Rochester & Pittsburgh. While with the B. R. & P. as assistant to the general manager, he was instrumental in revising the operating rules and he founded and was the first editor of that railroad's employee magazine. Mr. James also originated the "sailing day" plan for l. c. l. freight on the B. R. & P. In May, 1918, he was appointed operating assistant to the chairman of the Inter-regional committee of the United States Railroad Administration in charge of operation at St. Louis, Mo., and East St. Louis, Ill. Later he was appointed director of safety on the Norfolk & Southern and the Virginian and during that time he revised and put into effect the present operating rules of the latter road, then becoming a member of the New York Terminal Operating Committee. Upon the return of the roads to private operation on March 1, 1920, Mr. James became associated with the staff of the president of the St. Louis Southwestern, being appointed special representative of the president of the Frisco in November, 1922. On December 15, 1923, he was appointed executive general agent in charge of oil territory in Oklahoma. Mr. James' promotion to traffic manager of the second district became effective on October 16.

## Engineering, Maintenance of Way and Signaling

**R. S. Kniffen**, division roadmaster of the Messabi division of the Great Northern, with headquarters at Superior, Wis., has been promoted to general roadmaster of the Lines East of Williston with headquarters at St. Paul, Minn., succeeding **George G. Smart** who has been appointed supervisor of work equipment, a newly created position. **L. J. Gilmore**, district roadmaster at Kelly Lake, Minn., has been promoted to division roadmaster of the Messabi division at Superior, replacing Mr. Kniffen.

**Charles J. Griffin**, principal assistant engineer on the Boston & Maine, with headquarters at Boston, Mass., has been appointed construction engineer in charge of Boston Terminal improvements, with the same headquarters. **Joseph A. Parant**, engineer of standards, has been appointed principal assistant engineer, reporting to the chief engineer, with duties as assigned, with headquarters as before at Boston. **Harold F. Fifield** has been appointed engineer maintenance of way, with headquarters at Boston, succeeding **William F. Cummings**, promoted.

**William F. Cummings**, engineer maintenance of way on the Boston & Maine, with headquarters at Boston, Mass., has been promoted to the position of assistant chief engineer, with the same headquarters. Mr. Cummings was born on December 9, 1887, at Charlestown,

Mass., and entered the service of the Boston & Maine in October, 1906, serving in the engineering department as chainman, rodman, transitman and assistant engineer until November, 1911, when he was appointed instrumentman in the division engineer's office. In April, 1914, he became assistant engineer in the valuation department, serving in that capacity until January, 1920, when he was appointed assistant valuation engineer. The following year he was promoted to valuation engineer. He was appointed auditor of disbursements in January, 1926, and in April of the following year he was appointed engineer maintenance of way, which position he held at the time of his recent appointment to assistant chief engineer, which became effective November 1. Mr. Cummings will report to the chief engineer and will be in charge of and responsible for standards, engineering design, valuation and real estate engineering.

## Mechanical

**Thomas W. Carr** has been appointed mechanical engineer on the Pittsburgh & Lake Erie and the Lake Erie & Eastern, with headquarters at Pittsburgh, Pa., succeeding **C. H. McConnell**, deceased.

**G. R. Whisler**, superintendent of the Chicago, Springfield & St. Louis and the Jacksonville & Havana, has been appointed superintendent of motive power, with headquarters as before at Springfield, Ill.

**George Schepp** has been appointed master mechanic of the Wichita division of the Missouri Pacific, with headquarters at Wichita, Kan., succeeding **J. B. Crahan**, who has been transferred to the Memphis and Little Rock divisions, with headquarters at McGehee, Ark., to replace **W. A. Curley**, deceased.

**Warren D. Gochenour** has been appointed master mechanic of the Rocky Mountain division of the Northern Pacific, with headquarters at Missoula, Mont., succeeding **Sutton H. Draper**, who retired on November 1 after 45 years of continuous service with that railroad.

## Purchases and Stores

**Edward T. Monroe**, who has been appointed general purchasing agent of the Buffalo, Rochester & Pittsburgh, with headquarters at Rochester, N. Y., was born in 1894 at DuBois, Pa. He entered railway service in June, 1911, as trucker in the storehouse of the Buffalo, Rochester & Pittsburgh at DuBois, Pa. He subsequently served as clerk, stenographer and chief clerk to the general storekeeper at that point and as chief clerk in the purchasing department at Rochester, N. Y., in which capacity he served until his recent appointment as general purchasing agent.

## Obituary

**John D. Potts**, passenger traffic manager of the Chesapeake & Ohio, died at his home in Richmond, Va., on September 27 from an acute heart attack.

**Patrick F. O'Brien**, for seventeen years civil engineer of the New York, New Haven & Hartford, died on October 31 at the age of 68.

**Victor H. Hagelbarger**, trainmaster on the Illinois division of the Chicago, Rock Island & Pacific at Blue Island, Ill., died on October 1 at that point. He had been a trainmaster at various points on the Rock Island for more than 22 years.

**George Henry Hicks**, chief engineer of the Northwestern Pacific, with headquarters at San Francisco, Cal., who died at Berkeley, Cal., on October 21 after 17 years in the engineering department of that company, was born at Savanna, Ill., on May 11, 1884. He entered railway service in April, 1902, in the engineering department of the Chicago, Milwaukee & St. Paul, being assigned to the Pacific Coast extension. A year later he became connected with the engineering department of the Western Pacific where he served with preliminary and location survey parties



George Henry Hicks

on the line between San Francisco, Cal. and Salt Lake City, Utah, and as resident engineer in charge of construction in the Feather River canyon and on the Allamont grade. From 1909 to 1911, Mr. Hicks was with the engineering department of the Southern Pacific on valuation work and he was then transferred to the engineering department of the Northwestern Pacific. With that railroad he served successively as assistant engineer, assistant valuation engineer and principal assistant engineer, until 1921 when he was appointed acting chief engineer. In the following year he was promoted to valuation and property engineer. Mr. Hicks was promoted to chief engineer in January, 1924.

THE CANADIAN NATIONAL reports that shipments of grain from its western terminus at Prince Rupert this year will amount to over 22,000,000 bushels.